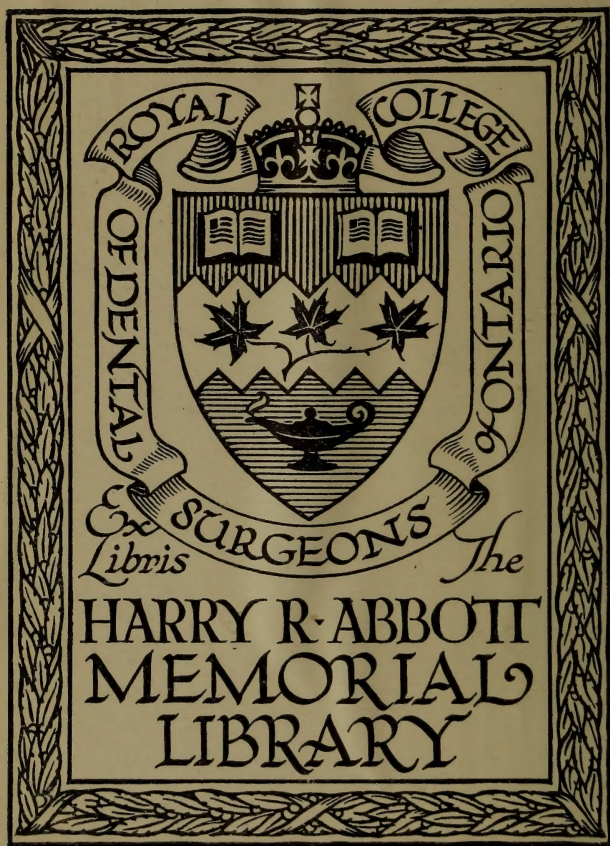
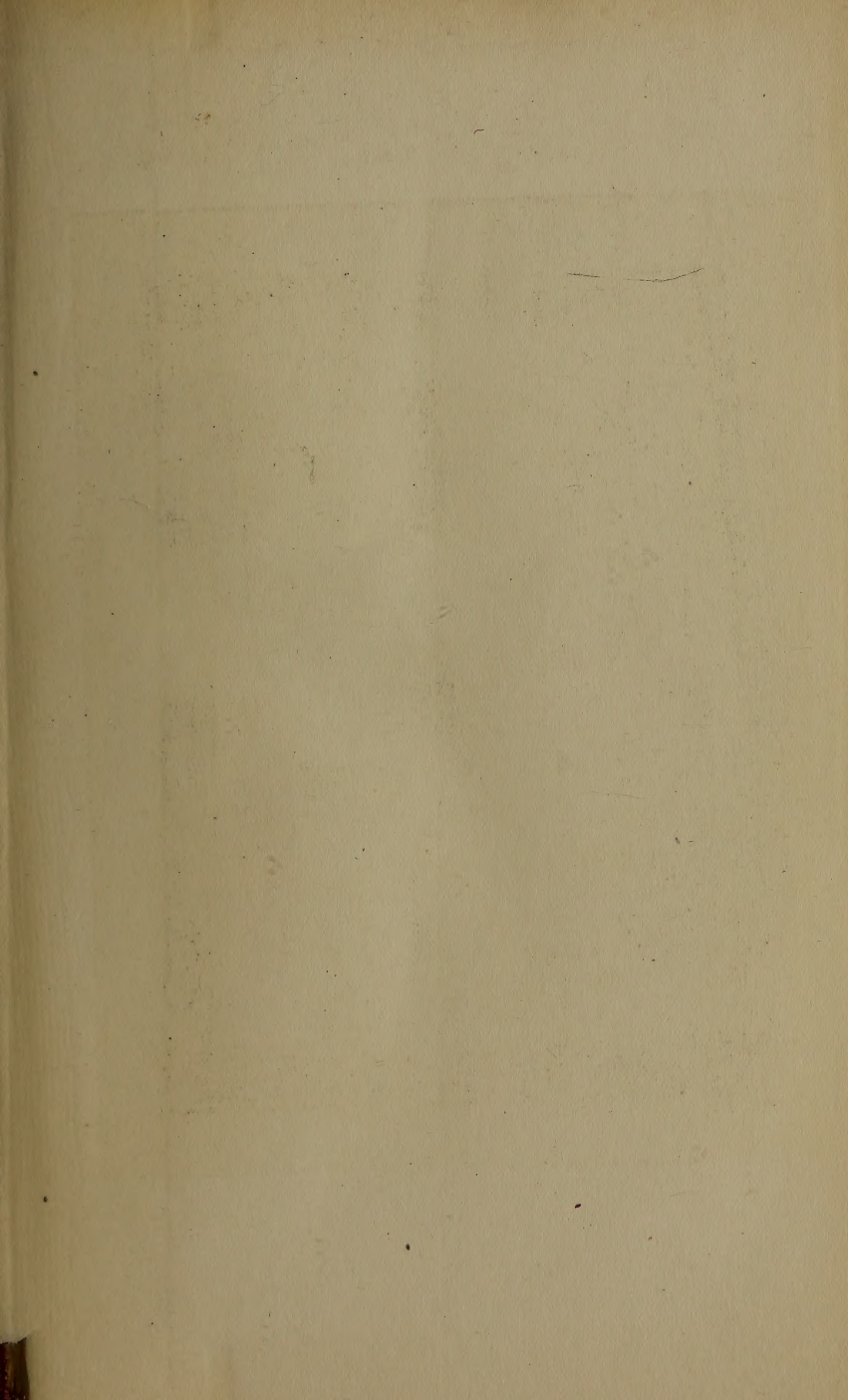
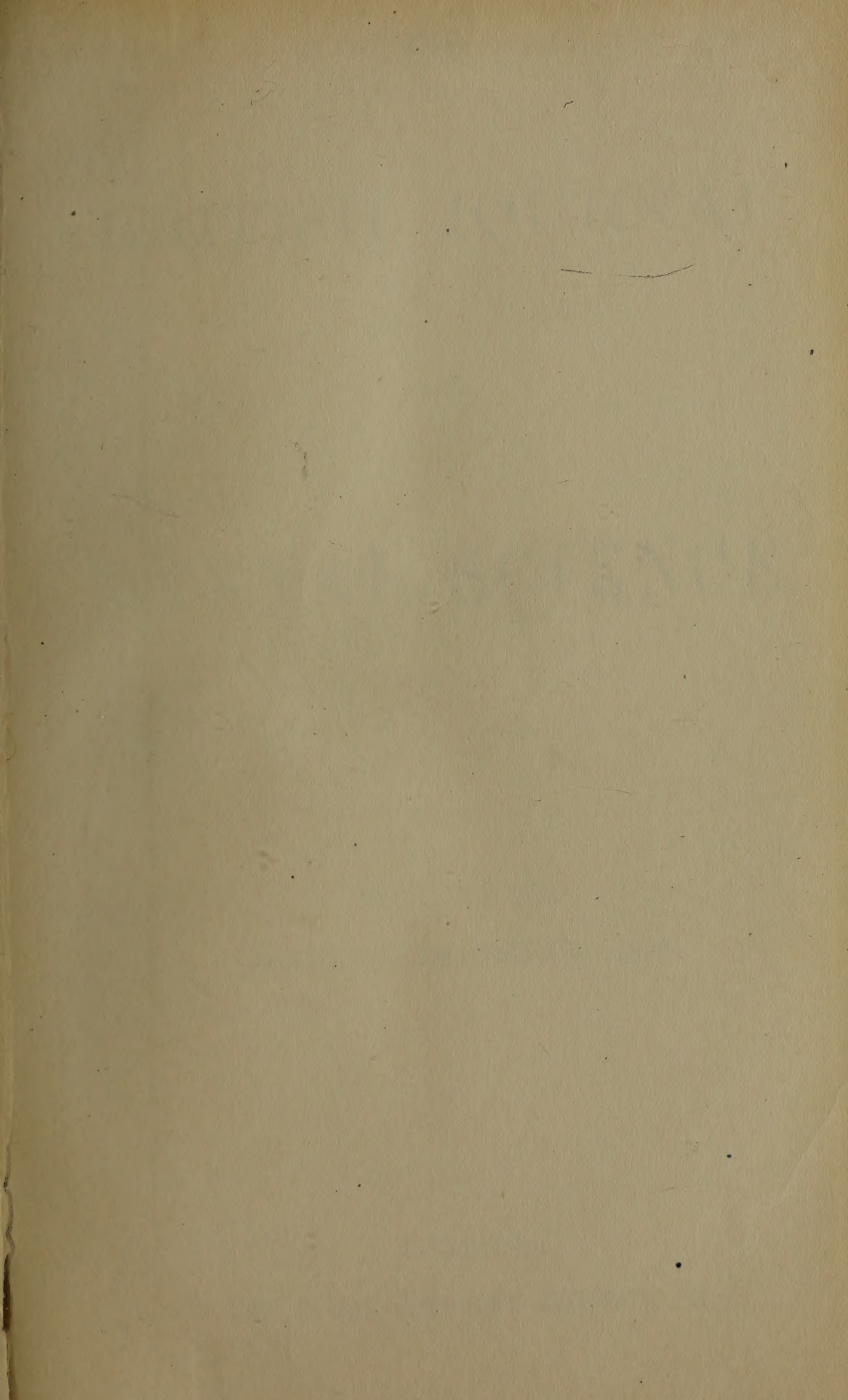




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ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 1077.)

TUMOURS OF THE PALATE.

Tumours of the palate are not common, but they are of many different kinds. They present a general resemblance to tumours of the salivary glands. They are more common in the soft palate than in the hard and on the left side than on the right. Most of them grow slowly, are painless and quiet, and therefore often unnoticed for many years.

The following account is based mainly on Mr. Stephen Paget's paper in the 22nd vol. of the St. Bartholomew's Hospital Reports.

DERMOIDS.

Dermoid tumours are occasionally met with in the middle line of the hard or soft palate. They vary in size from that of a hazel nut to that of an orange; they are often pedunculated. In some cases the tumour is solid and is covered with skin bearing hairs and sebaceous glands, and in others the tumour forms a cyst the inside of which is lined by skin. In

one recorded case the tumour was no less than eight inches long and five or six broad and protruded from the mouth of a newborn child causing great impediment to respiration. The tumour contained rudimentary limbs and generative organs and four inches of intestine, as well as nodules of bone and cartilage.

Small pedunculated dermoids may be easily ligatured and removed. The larger tumours may necessitate a very formidable operation.

EPITHELIAL PEARLS.

Epithelial pearls are minute bodies consisting of concentric laminæ of horny epithelium : in some the epithelium forms onion-like layers without any tendency to cornification.

They are very commonly found in new-born children, situated in the middle line and near the posterior margin of the hard palate, in the alveolar processes, and on the anterior surface of the gums; they are also found in other parts of the body at the lines of reflection of epithelial surfaces.

They are produced by the retention and subsequent moulding of shed epithelium in the recesses of sebaceous glands, in mucous crypts or in folds of epithelial-covered surfaces. According to Bland Sutton those pearls found in the middle line of the palate are the result of inclusion or sequestration of portions of epithelium in the process of fusion of the palatine processes of the two maxillæ, but Kanthack has shown that they are due to ingrowths of epithelium resembling the enamel organ and can always be traced to the surface. It is possible that the small supernumerary teeth sometimes found lodged in the mucous membrane over the meso-palatine suture are formed in this way.

Epithelial pearls are only of pathological interest ; they produce no symptoms and do not require treatment.

CYSTS.

Cystic tumours of the palate are very rare. In addition to the dermoid cysts already alluded to, a few cases have been observed in which dental and dentigerous cysts have made their way towards the hard palate producing a fluid tumour in that situation. Jourdain has recorded a case of blood cyst occupying all the left half of the palate.

VASCULAR TUMOURS.

Tumours composed of dilated veins like *nævi* have been observed on the palate, they are of a purple or livid tint, and of a soft doughy feel; they have a tendency to bleed, and may vary in size from time to time.

Aneurysms of the posterior palatine artery have occasionally been met with. In most cases they have been the result of injury. Electrolysis is the best means of curing these tumours.

POLYPI.

Polypoid growths of the palate are delicate out-growths of connective tissue attached by a slender pedicle either to the uvula or to the soft palate. Sometimes they are symmetrical. They do not occur on the hard palate. Their surface is covered by stratified epithelium and is finely wrinkled, or roughened with minute filiform papillæ like those of the tongue; their lymph spaces are well developed and their blood vessels large.

They are commoner in men than in women, and are very seldom met with in childhood. They may exist for years without producing any symptoms and may be found out only by accident. Sometimes they produce a tickling at the back of the throat and repeated efforts at swallowing.

They should be snipped off with scissors.

PAPILLOMATA.

Papillomata are more common on the soft palate than on

the hard, but sometimes they may extend over the whole palate.

In microscopic structure they resemble other papillomata ; sometimes they are pedunculated, and sometimes they are sessile or attached by a short broad pedicle. They often grow without discoverable cause, but are sometimes of syphilitic origin. The symptoms are the same as those of polypoid tumours.

They should be removed with knife or scissors ; the bleeding which follows removal may be very free but can be controlled by pressure or by the actual cautery. Caustics are of little or no use.

ADENOMATA.

The term adenoma as applied to tumours of the palate has a clinical rather than a pathological significance. It means a tumour slow in growth, innocent in nature, firm, limited, and, as a rule, shelling out easily.

Adenomata are equally common in men and in women. They occur about puberty and between the ages of forty and fifty. They are much more common in the soft palate than in the hard. Their growth is extremely slow and they produce so few symptoms that they usually remain a long time without giving any trouble or even without being noticed.

They are rounded or oval with their long diameter from before backwards. They are usually elastic, sometimes so much so as to give the impression that they are fluid, but sometimes they are hard and tough. The mucous membrane covering the tumour may be thinned from pressure, but it very rarely adheres or ulcerates ; it generally remains healthy, freely movable and unbroken over the growth.

The structure of these tumours is extremely complex ; they contain masses of epithelial cells without any very definite shape or arrangement, part being developed into gland

tissue, part breaking down into irregular tracts of a hyaline granular material and part forming cell nests or epithelial pearls. Blended with the epithelial structures is a quantity of embryonic connective tissue, myxomatous tissue, or fully formed fibrous tissue.

Treatment. Adenomata can nearly always be enucleated. For this purpose sufficient anæsthesia can often be obtained by injecting a 2 per cent. solution of cocaine under the mucous membrane. The mucous membrane should then be incised, taking care not to wound the tumour itself. If the growth is in the soft palate enucleation is greatly facilitated by passing a finger into the naso-pharynx and pushing the soft palate and the tumour forwards, hæmorrhage may be stopped by continued pressure.

SARCOMATA.

The sarcomata found in the palate are mostly of the round-celled variety. They are rarer than the adenomata; they occur with equal frequency in men and in women, and more often in the soft palate than in the hard. They are most often met with in persons of forty or older, and do not occur in young subjects. They grow much more rapidly than the adenomata. They are malignant, although the degree of malignancy varies. Some are distinctly encapsuled, whilst others are devoid of capsule. Those tumours which extend downwards into the region of the tonsil are more malignant than those which advance forwards lying *in* the soft palate, and *on* the hard palate; the latter are more likely to be encapsuled.

Treatment. If the tumour be not very large, not of rapid growth, and not adherent to the tonsil or pharynx, it should be removed by enucleation. But if the tumour is of more rapid growth, and extends far back towards the tonsil and pharynx, a much more extensive operation will be required,

very likely necessitating tracheotomy and ligature of the carotid. In such a case the surgeon must carefully consider the case in all its aspects, and must not embark on such a severe operative procedure unless there is a reasonable hope of removing the whole disease.

CARCINOMATA.

Carcinoma of the palate is a rare disease. There are two varieties, viz., squamous epithelioma, which begins in the surface epithelium, and medullary carcinoma which begins in the deeper parts of the mucous membrane. Squamous epithelioma usually begins in the gum and invades the palate secondarily (see Epithelioma of the Gums). Sometimes it ensues upon long standing psoriasis or warty disease of the palate. The disease presents the same characters as epitheliomatous ulceration elsewhere, the glands are affected early and extensively, and death ensues in a short time.

The medullary form of carcinoma differs from that just described in that a distinct tumour is formed which soon adheres firmly to adjacent structures, grows rapidly and ulcerates in its centre. It is even more rapidly fatal than epithelioma.

It is only seldom that these formidable tumours are seen early enough to give the surgeon a chance of performing a successful operation. A happy result can only be hoped for when the disease is diagnosed very early, and very freely removed.

(To be continued.)

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 1116.)

Plate-work is made up of details, small in themselves yet conducting, if observed and carried out, to the production of a case with a perfect finish; from the beginning to the end of the work care must be observed, and each process carried out in an intelligent manner.

The student must be early made to understand and recognise that the first principle to grasp, is to learn to take care of the plaster model, for let the case be ever so well made, if the model has been rubbed, or abraded, during the process of fitting the plate and clasps, it will not fit the mouth.

Thus we begin with the preparation of the plaster model, and the means taken to preserve it from injury; on this the success of our work depends.

For vulcanite work the model is usually made as thin as possible consistent with strength, but for plate-work, it should be cast from one and a half to two inches deep; this is to ensure a fairly substantial zinc model, and also to avoid the risk of fracturing it, during the process of moulding in the sand. The sides of the model should also be bevelled, from the base to the alveolar borders, to permit of its ready withdrawal from the sand (Fig. 8).

The object of having stout zinc dies is to avoid the possibility of their splitting during the hammering incidental to the swaging process.

After trimming up the model, it should be placed on the top of a stove, or other warm place, taking care that it does not get overheated.

Should such an event happen the plaster is rendered soft and friable and is easily injured.

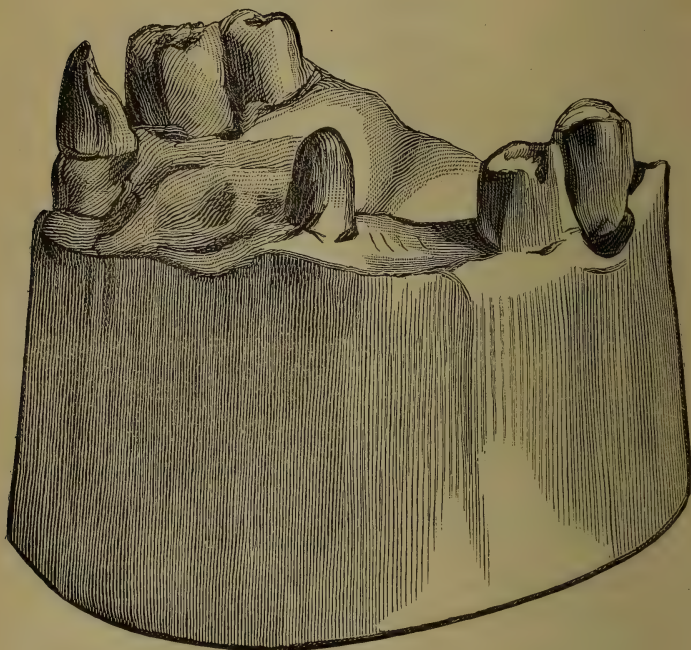


Fig. 8.

After drying, and while the model is still warm, it may either be varnished with brown spirit varish, or boiled in stearine. A mixture of two-thirds bee's-wax and one-third resin may be used in the place of the stearine, but does not produce such a nice looking model, nor one so pleasant to handle.

The object of thus treating the plaster model is to still further lessen its liability to be rubbed.

At this stage the model may be further prepared if found necessary, by padding the various parts, that are likely to be rubbed down or flattened during the process of swaging. For instance, certain prominent parts of the alveolar ridge, such as the tuberosities, or deep rugæ in the palate, may have a thin film of wax melted on them, so that when the model is cast the die will be slightly bolder in these situations than the original. A little padding may also be necessary around the necks of the teeth when the gum is depressed owing to a slight dragging ; and any undercuts at the necks of the teeth may be filled up with wax so as to ensure the model parting from the sand.

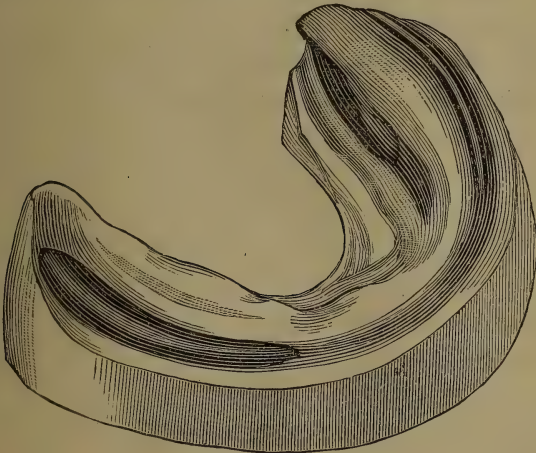


Fig. 9.

Lower models are also padded in the buccal, and hyoid regions, to take off the pressure from the edge of the plate, as represented in Fig. 9.

After the plaster model has been prepared, in either of the foregoing ways, it is ready for casting in the sand.

As this process has been fully entered into in the section of this work entitled "The Dental Laboratory," it will be suffi-

cient if we just mention here, that the model is taken and dusted with French chalk, then laid on the floor of the sand, box, and a brass or iron ring placed around it. The sand having been previously damped sufficiently for it to hold together, is now sprinkled over the model, then pressed down on to it, and the mould completely filled up.

On reversing the mould the base of the model is exposed, and it may either be removed by tapping the bottom of the model, and letting it drop out, or it may have a steel point driven into the centre of it, then gently tapped, and lifted out at the same time.

When two or three of these sand impressions have been obtained, they are filled with melted zinc to make what are known as zinc models or dies.

These dies are now taken and any imperfections removed either with a file or sculptor ; they are then ready to be dipped into melted lead, previously poured into a vessel of a suitable form, so as to form a counter-die. These counter-dies can also be formed by sinking the zinc model in sand, leaving exposed only as much as is required to be sunk in the lead. A wrought-iron ring is now placed around the model and slightly pressed into the sand, and melted lead is poured over the zinc model and the ring filled up. The removal of the lead counter from the ring will be more easily effected if the latter is rubbed on the inside with a little dry whitening, previous to pouring the melted metal into it.

After the dies and counter-dies are prepared, a piece of thick lead foil is moulded to one of the former, and a pattern cut out to represent the size and shape of the gold plate required. The object of moulding and cutting out the pattern on the zinc die is to avoid any chance of rubbing the plaster model.

Cutting out a correct lead pattern is not by any means such a simple operation as many would imagine, more especially

where there are several narrow spaces between the teeth. To mould the lead foil into these spaces, and yet preserve it intact is a stumbling block to the student for some time.

The best method we have found for overcoming this difficulty is to press the foil into the palate, then before the foil is pressed right home the surplus should be cut away. The pattern cannot be cut out too accurately ; the author's opinion is that the more perfect the pattern is the more simple the swaging operation. The only situations where a little surplus may be tolerated and perhaps be advantageous, is the tongue of metal that goes between two teeth, and at the back of the lower front teeth in the case of a bar lower.

If a pattern is cut large, the workman or pupil is very apt to depend upon such excess, to counterbalance any defect of manipulation, and does not therefore take the same amount of care in swaging the case, as he would with an exact pattern.

The lead foil should be moulded accurately and neatly around and between the teeth if any are standing on the zinc model, and care should be taken to keep it free from splits or cracks. This can be satisfactorily accomplished by means of a blunt-pointed instrument. The pattern should come up the crowns of those teeth that are not to be clasped, but only one third the way up those that are to be so treated.

The lead pattern should be flattened very carefully, manipulating a little at a time until the whole is quite flat, when it may be gently pressed on the bench or some flat surface. During the flattening process the spreading of the pattern must not be controlled, for as the wrinkles are pressed out it naturally alters its shape considerably.

The pattern is now ready to be placed on a sheet of gold which ought to have been previously annealed, (that is softened by being made red hot), to enable it to be cut without splitting.

Now some amount of care is requisite in cutting out the plate to avoid wasting the gold, by judiciously placing the pattern on it in such a manner that the remaining portion of gold will come in for other suitable cases. Anyone experienced in this particular, will cut four or five plates from a sheet of gold, from which an amateur would only obtain three or four.

After the pattern has been outlined on the gold plate with a lead pencil, a pair of half-round shears is used to cut out the plate.

The recesses in the plate, corresponding to the position of the natural teeth on the model, may be cut out with the same shears ; but as there is considerable risk, especially with a novice, of the shears slipping and making a more extended cut than was intended, it is much the best plan to use plate cutters, these make a half-round cut through the plate at the deepest part of the recess, and so enable one by making two simple lateral cuts with the shears to remove the piece.

The next operation is to file the edges of the plate smooth, removing all flaws, using for the purpose a smooth rat-tail file for the recesses, and the back of a half-round file for the other parts. If these precautions are not taken cracks may appear in the plate during the swaging process that might otherwise be avoided.

After once more annealing the plate, it is ready for the operation known as swaging, or stamping it into shape.

Treatment of the first zinc model.

If there is any difference in the excellence of the two or three zinc dies taken, the worst of the three should be used first, and any imperfections that may present themselves should be removed with file or sculptor.

When there are natural teeth standing on the model, and the plate has to extend into the spaces between them, these

teeth should be reduced one half ; this may be done either with a strong pair of nippers, a metal saw, or a rasp, and the remainder bevelled in such a manner down to the gum to present as wide a space as possible for the plate to be forced into (see fig. 10.)

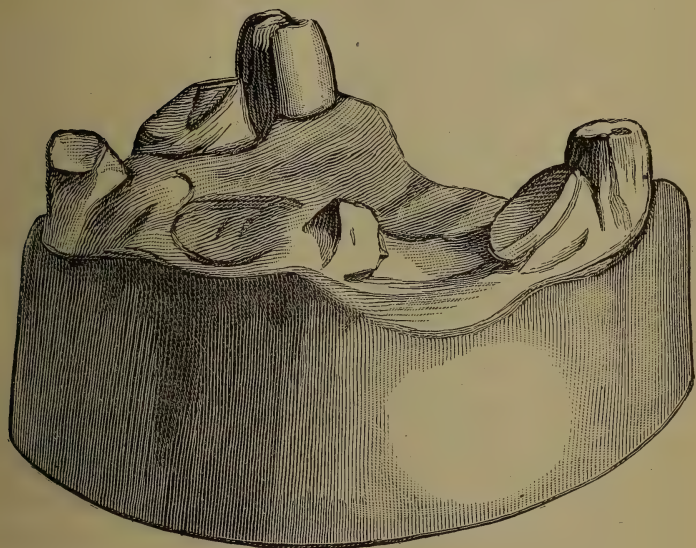


Fig. 10.

This bevelling of the teeth on each side of a space only applies to the first zinc cast ; the teeth on the second or best cast may be cut down if the plate is not required to extend up them but the teeth must not be bevelled.

This will in a great measure avoid the buckling, or in other words a doubling of the plate.

Having been annealed, the plate may now be partially swaged, or beaten somewhat into shape on the zinc model by means of a bone or wooden mallet.

(To be continued.)

British Journal of Dental Science.

LONDON, JANUARY 1, 1896.

THE GENERAL MEDICAL COUNCIL.

In the last number of the JOURNAL our readers found a report of those portions of the proceedings of the General Medical Council of most interest to dentists. Prior to the general session of the Council, the Executive Committee had considered a Memorial from certain unregistered men. The forty gentlemen who signed this petition for their registration considered that they had a claim for the request under Clause 37 of the Dentists' Act. Now this section appears to us to consist of two distinct parts, although, with the characteristic vagueness in punctuation of legal documents, they are only separated by a colon. The first states that a pupil who paid a premium to a registered practitioner for a complete dental education, and whose articles expired before 1880 shall be entitled to be registered as though he had been in practice at the passing of the Act. The second part of the Section says that "Moreover" it shall be lawful for the Council by special order, to dispense with such of the certificates or other conditions for registration, as to them may seem fit, in favour of any students or apprentices who commenced their education or apprenticeship before the passing of the Act. Under these arrangements many were admitted to the Register, but in May, 1891, the Council passed the following resolution:—"That the By-Laws or Orders of the Council which relate to persons who have commenced their professional Education or Apprenticeship prior to the passing of the Dentists' Act, but have only completed it after the passing of that Act, and which By-Laws or Orders dispense with the Certificates, Examinations,

and other conditions for Registration in the *Dentists' Register* required under the general provisions of that Act, be hereby "revoked," so as to cease to have effect on and after July 22nd, 1891."

Our readers will have noticed that the Council refused to receive a deputation from the memorialists, and a statement was made that the above-quoted resolution would not be departed from. We certainly hold no brief for the memorialists, and pointed out at the time that as thirteen years had elapsed since the Act was passed, most would agree that it was high time the exemptions ceased to be made. And yet there seems to be a somewhat nice point involved. Did the revoked By-Laws of the Council cover what we have termed the "first" part? It is true the words "other conditions for registration" are to be found there, but it seems hardly probable that they refer to the first part of the Section in view of the use of the word "Moreover," which commences the second part. We take it, however, that any claim to be registered made on a strict interpretation of the first part would involve the necessity on the part of the pupil of proving, to the satisfaction of the Council, that the practitioner who taught him had given "a complete dental education." And if this expression be held to mean an education based upon the curriculum for the Diploma, we doubt if any registered practitioner could be found who could meet the requirements.

Another dental matter before the Council was the Report of the Inspector upon the Examinations at Glasgow. There appears to be a serious difference between the Inspector and the Examiners, and Dr. Cameron objected to the Report being entered on the minutes, to become public property, until the Examiners had an opportunity of clearing up certain points with the Inspector. Dr. Cameron, however, gave us some insight into the case by the remarks he thought it necessary to make. When the question comes up again perhaps the Faculty of Physicians and Surgeons will also be able to explain the circumstances under which they have allowed a D.D.S. of Michigan to

enter for their Diploma, accepting the curriculum of that University in lieu of their own, notwithstanding that the Council no longer recognises it as satisfactory for registration.

ANOTHER ODONTOLOGICAL SOCIETY.—We understand that Liverpool is to have an Odontological Society on much the same lines as the successful one in the neighbouring city. A circular signed by some well-known names was sent to all the non-advertising members of the Profession in the district inviting them to attend a general meeting. A provisional committee was appointed to draft the necessary bye-laws, and there appears every reason to expect a satisfactory result. Mr. J. A. Woods, L.D.S. Eng., is the Hon. Sec. *pro tem.* of the Liverpool District Odontological Society.

A NEW ANTISEPTIC.—At the meeting of the British Medical Association, Dr. Herbert Snow read a paper on "Loretin" before the Section of Pharmacology and Therapeutics. The new substance is an organic iodine compound discovered by Professor Claus of Freiburg, and is recommended as a safe and pleasant substitute for iodoform. Dr. Snow has used the powder unmixed with any other substance, and when dusted on the skin or over a granulating wound there was no irritation. It immediately destroys the bad odour of the most foetid cancerous sore controlling this in a better manner than any other agent Dr. Snow has tried. The table of experiments shown in the appendix to the paper proves that Loretin is a powerful microbicide much superior to iodoform. Its proper name in chemical nomenclature is meta-iodo-ortho-oxyquinoline-ana-sulphonic acid, but of course this is a detail.

DENTISTRY FOR THE SEASON.—We have received a copy of a Huddersfield newspaper in which, wedged in between the ordinary advertisement columns, appears "A Glance at

the Season's supplies." Under the heading "Dentists," we are informed that the Christmas beef and the numerous culinary delicacies provided at this season cannot be fully enjoyed without good teeth. And further, that the lack of such can be overcome at several well-known establishments, the proprietors of which are then mentioned by name. Fulsome remarks are interspersed with statements about prices, but although all the persons are described as dentists, our readers will be prepared to hear that several are not upon the Register. "Needless to say, all the above-named gentlemen are prepared to extract teeth without pain."

THE MEDICAL DEFENCE UNION.—The prosecution by this Body of "Dr." Ferdinand proved successful. He had described himself in a Chelsea newspaper advertisement as the "first physician in the world," and claimed to be a duly qualified doctor of medicine from the Eclectic Schools of America. The magistrate said he was quite satisfied that the defendant had violated the law. The people who were injured by his kind of practices were generally poor and ignorant, and unable to protect themselves from such quackery. It was a case for the full penalty of £20 and £10 costs, or two months in default of distress. Pending the return of the distress warrant, the defendant would be detained or find surety for the penalty and costs.

POISONING BY MILK.—Dr. Robinson, of Dover, has recorded an instance of five adults, in a household of seven, being attacked with severe colic and vomiting. The symptoms lasted from two to four days, and in the worst cases there were other indications of poisoning. It was found that the victims had taken some milk which had been treated with "glacialene" containing boracic acid, as a preservative. Before delivery, however, the milk had already had boracic acid added to it with the same object.

There were no other circumstances to account for the outbreak, and when some of the milk, mixed with blanc-mange, was given to fowls, five out of nine died, and the others showed signs of poisoning to a less degree. We have already drawn attention to the additions made to our food-stuffs for the purposes of preservation, and the danger, especially to infants and children, is a very real one.

THE FOUNDER OF "THE LANCET."—The present proprietors of *The Lancet* have wisely determined to publish a biography of Thomas Wakley on the occasion of the centenary of his birth, and the last issue of the year contained the introduction. As Sir John Erichsen writes, "the present generation of medical men know little of the man who exposed and fearlessly attacked the manifold abuses that existed in every department of the profession, in the colleges, hospitals, and medical schools, in the first third of this century. Corruption, jobbery, nepotism, and promotion by purchase were rife, and Sir John probably speaks for himself also when he says that the reform brought about by Wakley, made a William Jenner or an Andrew Clark possible. Mr. Wakley gave up general practice and started *The Lancet*, and we are told that for the next ten years its pages were the duelling ground for a series of fierce encounters between the editor and the members of the privileged classes in medicine."

FAULTY ARTICULATION.—Dr. L. P. Haskell believes that more failures in artificial dentures result from this cause than from any other. In adjusting a denture in the mouth the six anterior teeth should not touch, as this would cause tilting of the plate from the rear. The bicuspid and first molars on each side should meet uniformly, but no pressure should rest on the second molar, especially if the occluding lower molar tilt forward.

Reviews.

The Dental Surgeon's Daily Diary and Appointment Book. Post 4to, 224 pp. London: John Bale & Sons, Oxford House, Great Titchfield Street, W. Claudius Ash & Sons, Broad Street, Golden Square, W.

The present is the third Annual Edition of this useful book, and it appears that Messrs. Bales' enterprise has been rewarded with success. The size of the Diary page has been increased and there is plenty of space between the "hours" so that they may alloted for shorter appointments. Purchasers have the option of taking copies with interleaves of blotting paper or ruled paper if they desire either of these additions. There are the usual lists of practitioners and school information which have characterised the Diary before, and at the end an opportunity is afforded for booking engagements for the first month in the next year.

The A. B. C. Medical Diary and Visiting List, 1896. Burroughs, Wellcome and Co., Snow Hill Buildings, London E.C.

This Diary is issued from the "Literary Department" of the popular firm of manufacturing chemists, and we are informed that a copy has been sent to every Medical man in Great Britain, India, and Australia. In addition to the Diary and Visiting List, there is a very large amount of useful information and yet the book is small enough for the pocket. The "Therapeutic Notes" have been brought up to date, and the "Index of Diseases and Remedies," Posological, Antidote, and other tables are calculated to be of service to the busy practitioner. The publishers invite hints and suggestions from medical men in order if possible to still further improve next year's edition.

The same firm also send us a copy of the "Chemists' Vest Pocket Diary.

Manipulative Miscellany,

It is requested that all new instruments or articles which it is wished to have described under this heading, be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

FERRO-PYRIN. (*Knoll.*)

The Dental Manufacturing Company send us a supply of a light orange-red powder with the above name. It is said to be very reliable in hæmorrhage following tooth extraction, and in other bleeding from the gum. We have not had occasion to try its effects after extraction, but in certain cases where oozing from the gum has made treatment of the cervical margin of a cavity troublesome we have found it of service. It is claimed that Ferro-pyrin has also an analgesic effect. The substance reminds us of the description of a styptic combination of antipyrin and tannin which we published in our last issue.

FORMALIN AS A PRESERVATIVE.

J. Hornell has experimented with formalin as a preservative medium for marine animals, and finds that for histological details simple immersion in a strong solution gives fair results, though better are obtainable by prior fixation, neither method, however, being so satisfactory as the ordinary plan of fixing and grading into spirit. The addition of three per cent of formalin to aqueous staining fluids used in microscopical work, was found to obviate any risk of the maceration of objects placed therein, and a three per cent. solution replaces pure water with advantage in washing out ordinary fixatives. Loss of natural colour in preserved objects proceeds much more slowly in formalin than in spirit, but in time the result is the same in both cases. For the majority of purposes, however, formalin is superior to spirit in the results obtained, and it is of course much less expensive.

Natural Science.

Abstracts of British & Foreign Journals.

LEUCOMA.

By GEORGE ACHESON, M.A., M.B. Tor.

In September, 1894, Mrs. C., æt. about 60, consulted me about a sore mouth, which had been troubling her for some months, and which was gradually getting worse in spite of all domestic methods of treatment. I found an irregularly placed white patch occupying the inner surface of the lower jaw, just below the alveolar border on the left side, extending also a little past the middle line in frons, and invading the floor of the mouth and under surface of the tongue. The teeth had all been extracted, and the patient was wearing upper and lower plates, though the lower plate hurt her so much that she wore it but seldom. There was no ulceration, the mucous membrane, if such it could be called, being thickened, white, smooth, and of a leathery feel. She said that sometimes pieces of white skin would peel off, leaving a very tender, painful, red surface, which would become gradually covered again by the white pellicle. In fact, the sensations described with the history and appearance of the mouth, made it certain that this was a case of what has been called by the various names of leucoma, leucoplakia, psoriasis, ichthyosis, keratosis, etc. But this is a condition usually limited to the dorsum of the tongue, though not unknown in other parts of the buccal mucous membrane. It is very unusual, however to find it in woman. Barker, in Holmes' System of Surgery, has collected 110 cases, of which only 9 occurred in females. Of the 101 cases in males, 55 affected the tongue only; 33 the tongue and cheeks; 12 the lips and cheeks; 1 the hard palate; and in four the location was not mentioned. Of the whole 110, syphilis was certain in 33; while in 19 it was certainly absent; 75 were habitual smokers; only 4 did not smoke at all. In my patient there was no syphilis, nor was she a smoker, but I am inclined to ascribe the cause to the irritation of the lower plate, which she said, had never been comfortable. Leucoma, in whatever situation is always of interest, as being a possible precursor of epithelioma. The only treatment is palliative, and in this case I gave a wash of sodii bicarbonas, gr. x to 1 oz., with a little listerin and glycerin.

THE IMPORTANCE OF EARLY TREATMENT IN CUTANEOUS CANCER.

Dr. A. R. Robinson, of New York, presented a paper at the Annual Meeting of the Canadian Medical Association. The speaker's presentation of the subject was a study of the pathological conditions found in epitheliomata of the skin. Charts were exhibited showing the method in which the neoplasms extended. There was an abnormal proliferation of epithelium. This proliferation was associated with the production of poisons which were injurious to the tissues. Then there was a change in the connective tissue with epithelial invasion by the lymph glands. At the first this cancer was a purely local disease, and progressed slowly, usually by reason of the resistance of the tissues. In this stage it was perfectly curable. It was a matter of regret that general practitioners allowed these cases to run on and on till it was too late for removal to save the patient. Too often they were dallied with by careless applications of silver nitrate, which only tended to materially aggravate the disease.

The Canadian Practitioner.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, November 4, 1895, Mr. David Hepburn, L.D.S. Eng., President in the chair.

The Minutes of the last meeting were read and confirmed.

The following nominations are before the Council. As resident members :—Frederick Lawson Dodd, L.R.C.P. Lond., M.R.C.S.Eng., L.D.S.Eng., 41, Wimpole Street, Cavendish Square, W. ; Walter S. Nowell, M.A.Cantab., L.D.S.Eng., 41, Wimpole Street, Cavendish Square, W. As non-resident members :—Ernest Catt, L.D.S.I., D.D.S.Mich., 11 Valley Bridge, Scarborough ; W. F. Cornelius, L.D.S.Eng., 29, Orchard Gardens, Teignmouth.

The following gentleman was proposed as [a non-resident member of the Society :—Henry Bambridge, L.D.S.I., 27, King Street, Great Yarmouth.

The following were elected non-resident members of the Society : A. W. W. Hoffmann, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., 30, The Parade, Leamington ; James Sim Wallace, M.D., B.Sc., 29, St. James' Road, Kingston-on-Thames.

The following having signed the necessary obligation forms were admitted members of the Society :—William Jarvie, 105, Clinton Street, Brooklyn, New York ; Ernest H. A. Mackley, 74, S. Giles' Street, Norwich ; John W. Tomlinson, 8, Warrior Square, St. Leonards-on-Sea.

The President said he had very much pleasure in bringing forward a recommendation made by the Council. It was customary occasionally to confer one of the few honours they had at their disposal upon old members of the Society who had served the Society well and had retired from practice. Mr. Balkwill had found it necessary to retire from active work and also from the membership of the Society. The Council recommended that Mr. Balkwill, in consideration of his many services and long membership extending as far back as 1861, should be elected an honorary member. The resolution was carried by acclamation.

The Librarian announced the following additions to the library :—*Dental Materia Medica and Therapeutics*, fourth edition, by James Stocken, revised by Leslie M. Stocken and J. O. Bucher, presented by the authors ; *Guy's Hospital Reports* ; the *Transactions of the Royal Medical and Chirurgical Society* ; and the "Calendar of the Royal College of Surgeons of England," in exchange.

CASUAL COMMUNICATIONS.

(1) *Ptoxis of Dental Origin*.—Mr. Main Nicol described a case of ptoxis associated with and apparently caused by a dental lesion ; it occurred in a young lady aged 25, who in June of the present year consulted him for severe unilateral facial neuralgia. She had suffered intermittently for more than a fortnight from attacks of pain commencing in the bicuspid region, and extending backwards from the angle of the jaw, upwards to the temple, and down into the neck, so that, as she described it, "the whole side of her face ached." The pain, she stated, was usually at first slight, dull and heavy

then became throbbing and eventually indescribably acute. These seizures varied in intensity and duration, with uncertain intervals of comparative comfort, and were most erratic in their onset though the patient volunteered the information that exercise or sudden changes of external temperature seemed to excite them, and that they also often came on at night; their duration varied from a few minutes to two or three hours. But what chiefly attracted attention was the half closure of the right eye, with pupillary dilatation and flushing of that side of the face. The patient stated that in one of these neuralgic seizures, more than usually severe, the pain had compelled her to close this eye, and that she had been unable to open it fully since. The condition of the left eye was normal, while that of the right was as follows; the eyelid was only half raised, so that when vision was directed horizontally forwards, the upper half of the eyeball was covered; when the patient attempted to open the eyes widely the right lid lifted scarcely at all, while the left eye responded naturally. The pupil was moderately dilated (about one-third of a diameter wider than its fellow), and reacted very sluggishly to light, though with accommodation and to consensual stimulation it responded almost as well as in the left eye. The conjunctiva and lid were also affected in that they shared in the hyper-vascularity of that side of the face, the congestion of the palpebral conjunctiva being specially marked. Vision was not tested; the patient said that it appeared as usual except that in a bright light she could not see well with the right eye, probably owing to the failure of the iris to contract.

Examination of the teeth revealed only three small fissure cavities in the crown surfaces of the right upper and lower third molars; in two of these cavities probing brought on the neuralgic pain. They were intensely sensitive, and excitation was only possible after the injection of cocaine hydrochlorate hypodermically into the surrounding gum; the cavities were then filled with oxyphosphate. The patient reported herself on the following day as much better, though the ptosis remained unimproved; three days later she had completely recovered, the lid and pupil having recovered their natural mobility, and no recurrence of pain had occurred. Fourteen days ago she reported herself as being quite free from pain and ocular trouble.

Taking everything into consideration, Mr. Nicol was inclined to the view that it was a purely functional, a *so-disant*

hysterical condition, although the medical attendant stated that the patient was not particularly neurotic, and had never shown any neuro-mimetic tendency.

(2) *Fracture of the Maxillary Tuberosity during the Extraction of a Second Molar Tooth.*—Mr. Main Nicol also read notes of a case in which the maxillary tuberosity was fractured during the extraction of a second upper molar. The accident was presumably rare, as he had been unable to find any account of a similar occurrence.

Ten months ago H. R. C., medical student, aged 20, consulted him in reference to the left second upper molar, which had been the cause of considerable pain ; it was the most posterior tooth of the series on that side, the third molar being unerupted, and was greatly broken down, the pulp projecting as a polypoid granulating mass, while acute periodontitis rendered any manipulation very painful. It was decided to remove it, the patient, however, mentioning that any teeth he had already lost were removed with difficulty as their roots were exostosed. Nitrous oxide and oxygen being administered, an attempt to extract the tooth was made but unsuccessfully, the more exposed part of the tooth crumbling up in the forceps ; a second trial was made, the blades being applied outside the alveolus, and the tooth was removed, though it required great force to withdraw it from the socket, even when quite loose ; as it came away, it was evident that some extensive solution of continuity had taken place. Hæmorrhage, somewhat free at first, soon ceased, and it was found that there was a vertical fracture of the body of the superior maxilla, reaching buccally higher than the reflection of mucous membrane from alveolus to cheek, and extending higher lingually than the palatine process, passing behind the posterior border of that structure ; the gum was correspondingly torn. The posterior fragment gave one the sensation of being united to the main portion of the bone above, round its point of connection, to which it worked as on a hinge. It was mobile in every direction, but all movement except anteriorly was accompanied by pain. Crepitus was very distinct, the patient himself detecting it when swallowing or touching the fragment with his tongue ; when swallowing he also complained of a sensation like "sore throat." There was backward displacement of the posterior fragment to the extent of about a quarter of an inch, but without any interference with hearing. The roots of the tooth were united into one mass by pathological cementum ;

and it seemed probable that the walls of the socket had undergone thinning *pari passu* with the radicular hyperostosis, thus predisposing to fracture. On anatomical grounds one must suppose that the antrum was opened, but no attempt was made to ascertain this.

Treatment consisted in the application of a splint and the frequent use of antiseptic mouth washes. The splint was made of metal, clasping the six-year molar, and extending posteriorly as a pear-shaped curved plate, the narrow part crossing the line of fracture, so as to permit free drainage, while the wider curved portion retained the posterior fragment in apposition with the anterior very efficiently. The subsequent course was uneventful; some deep-seated tenderness on pressure over the malar bone was noticed on the third day, and gave rise to a suspicion of suppuration in the maxillary sinus, but this did not occur; one or two minute sequestra were spontaneously extruded between the ninth and twelfth days, and on the eighteenth day the splint became loose and was removed. The third molar was erupting beneath it, and as union was moderately firm the splint was not replaced. When the patient was seen three weeks ago union was perfect, and apparently osseous, the wisdom tooth fully erupted, in good position, and separated from the first molar by a space not greater than one-sixteenth of an inch.

Mr. F. J. BENNETT asked if inquiry was made as to the probability of influenza being the cause of the first case mentioned by Mr. Nicol. It might seem far-fetched, but he thought if they were to go into the matter it would be found that a great many of these obscure cases could be fairly traced to epidemic influenza. He had two cases in the summer in which there were severe neuralgic pains which, with slight headache, were the only symptoms. The patients were both quite unable to get about and had to be kept in bed. The teeth were perfectly free from caries, periostitis, or any local symptoms. They both yielded to antipyrin, getting perfectly well without any local treatment whatever. It was quite possible that the flushing of the face, the unilateral neuralgic pain and the ptosis might quite well be put down to influenza. At any rate, it was a thing well to keep in mind, so that in the event of other methods failing, they might try some such drug as antipyrin, given in ten-grain doses at first, and then five-grain every half hour until the pain was relieved. If the heart's action was at all weak a

teaspoonful of brandy given every half hour would counteract any depressing effect of antipyrin.

Mr. ALBERT said he thought Mr. Nicol's explanation was entirely satisfactory. He had a case of a lady who had ptosis and was requested, much against his wish, to take out a tooth; but there was no doubt in his mind that the extraction of the tooth had nothing whatever to do with the ptosis, although it disappeared in a week. The fact of the dilatation of the pupil was good evidence enough that the hysterical affection was at the bottom of the difficulty. He believed he was right in saying that during the pain the pupil was generally contracted. He believed that Mr. Nicol was perfectly correct in attributing the cause to hysteria, but he would ask whether there was a possibility as to its being a case of temporary diphtheritic paralysis.

Mr. VANDERPANT thought in the case mentioned by Mr. Nicol that if the tooth had been split the roots might have been removed without fracture of the alveolus.

Mr. MATHESON said he had a somewhat similar case which he had brought before the Metropolitan Branch of the British Dental Association. In that case the fracture occurred in the extraction of the sixth-year molar. The patient was a boy about twelve, and as the second molar was coming down he wished to make more room for it. The sixth-year molar was not a good tooth, and had to be removed. Being extremely firm it was extracted under gas. When it came away it was found there was a fracture of the maxilla. The case corresponded almost exactly in appearance to that mentioned by Mr. Nicol. The boy gave a sudden spasmodic movement just as he was applying the greatest force that could be safely applied, and it was just then that the fracture occurred. Gas being again administered he was able to press the fragment into position. It went very comfortably into its place, and seemed to be so firmly settled that it was not thought necessary to put on a splint. The boy was at school and was told to come again if he had any trouble. He did not see him until the end of the term, and then everything was perfectly quiet and safe, and he could trace no history from the boy of there having been any trouble. This was satisfactory, but it showed how, even in extracting a tooth so far forward as the six year molar, one must be prepared for an occasional occurrence of that kind.

Mr. NICOL, in reply, said in the case of the young lad

he had made enquiries of her medical attendant, but he could give no history of influenza. With regard to the possibility of diphtheritic paralysis, there was nothing at all corresponding to that. With reference to the other case, he was sorry he had not the tooth to exhibit, but he did not think splitting it would have been an easy operation. It would certainly have taken far more trouble and possibly would have done quite as much harm as the extraction.

Mr. BOYD WALLIS presented a series of models showing supernumerary teeth; also a model of the case of a boy who suffered from a growth at the back of the nose. He said some few months ago Mr. Harding gave a Casual Communication upon perchloride of mercury. No discussion then took place, and he should therefore like to read a note he had made on the subject.

“A great deal has been said and written upon perchloride of mercury as an antiseptic in the treatment of the teeth, and the discolouration which is supposed to follow its use. When I was in practice in the south of France some twenty five years ago, it was the custom to embalm the bodies of foreigners who died there prior to their removal for burial elsewhere, and the process consisted in injecting into the arm an aromatic fluid containing a strong solution of perchloride of mercury; by this means the body was perfectly preserved, so far as my experience goes, both as regards antisepticity and colour. A body which I had assisted to embalm I saw some three months after this process had been carried out, and the results were entirely satisfactory. These results led me to test perchloride of mercury in the treatment of the teeth, and for this purpose I have no doubt as to its value, but unfortunately its use is too often followed by acute pain, but the pain I have always found to gradually decrease and pass away.

“Two other important objections to its use have been raised; first, that it is a powerful coagulant of albumen, and therefore useless for our purpose. It certainly does coagulate albumen, forming a mercuric albuminate, but that does not appear to reduce its antiseptic properties, for it is quite evident that when used for embalming purposes it has the property of permeating the tissues to an extraordinary extent, and the result we get with the perchloride treatment of the teeth is further evidence of this, for it is not at all uncommon to find in from two to ten days after its application to dead teeth that intense pain follows, showing that whether

coagulation has taken place or not, the mercuric salt has penetrated the tooth. The other objection is as to discolouration of the teeth which is supposed to follow its use. I certainly have seen discolouration succeed its application, but was this due to the perchloride; or was it the natural sequel to a dead pulp? I have here some of a number of specimens which I have tested in solutions of perchloride (acid and neutral) of various strengths, for different periods of time from two to many months, and they do not appear to have changed colour in the least. One only containing a filling has turned green, probably from the formation of copper by the union of the ammonium chloride with the copper of the amalgam. Perchloride has this advantage—its antiseptic power is not, like that of so many other antiseptics, destroyed by admixture with organic matter.

“I have kept small animals, birds and snakes for many months by injecting them with a solution of perchloride.

“The ‘kyanizing’ process for the preservation of timber consists in impregnating it with perchloride of mercury, and here coagulation takes place in the first instance.

“If a mercuric albuminate is formed it probably re-dissolves in due course of time, and absorption then takes place. It is soluble in an excess of albumin, or in chloride of sodium. I may mention one out of many cases which I have treated it is that of a badly decayed and abscessed upper lateral of one of my sisters, which I treated in the autumn of 1873. As I was at the time about to leave for Biarritz I simply cleared the cavity, filled the pulp chamber with a paste of perchloride and an essential oil on cotton wool, and roughly filled the tooth, with the intention of doing something more to it on my return to England; but on seeing the tooth again I found it doing so well that I left it alone, and this tooth gave no further trouble until 1892 when my sister became very much broken down in health, and then another abscess formed and the tooth was extracted.

“As the perchloride is so irritating in its action it is a question in my mind whether we shall not find the double cyanide of mercury and zinc better for our purpose, as it is less irritating and a powerful antiseptic; one ten-thousandth part of the salt has been found to preserve blood serum free from organic development, in spite of inoculation with septic fluid.

“In cases of severe pain already existing, I treat the tooth

in the first instance with iodised phenol (iodine 1, carbolic acid 4) with a little cocaine and menthol added.

“Another preparation perhaps worthy of notice is the *biniodide of mercury*. Dr. Pietra Santra has found that a rabbit injected with a solution containing two milligrammes of biniodide and a sheep with five milligrammes were preserved for several months, the meat being in a perfect state of preservation.”

Mr. REINHARDT said he should like to ask Mr. Wallis the cause of discolouration resulting from the use of Miller's tabloids—the compound of the sublimate and thymol. His experience was that the teeth became distinctly greyish in colour. He found in the case of a young lady, although no amalgam was used, that the first bicuspid in the upper jaw for about an eighth of an inch below the gum turned a dark green colour. In that case the perchloride was used, but no amalgam—simply gold and cement. He should like to know how the discolouration arose.

Mr. WALLIS said that sometimes they got discolouration in pulpless teeth, no matter what was used. He did not know that he had ever seen any special discolouration from the use of perchloride.

Mr. SAUNDERS exhibited a form of scaler which he had found of some use. The handles were roughened, they were larger than the old pattern, and the instrument was very much shorter from the handle to the blade. It had the advantage of giving a firm grip, and bringing the point of the instrument nearer the fingers, so that they had the thumb and the third and fourth fingers on the teeth. He also exhibited a finishing file which he had found useful. It was made thin so as to enable the file to pass between teeth which were not divided, and the angle was a little varied, so as to meet the case of teeth which were irregular. He had found it very useful in the case of irregular bicuspids where it was otherwise difficult to get at a distal filling.

The President then delivered his Inaugural Address, which was published in our last issue.

ADJOURNED DISCUSSION ON

Mr. Cunningham's and Mr. Sidney Spokes' Papers on “The Immediate Regulation of Teeth.”

The SECRETARY read the following letter on the subject received from Mr. W. Hern:—I regret I am unable to come to the Odontological meeting to-night, but as I have treated

a few cases of instanding front teeth by the immediate method, I think it well to send you the models of one of the cases which is to my hand. The teeth of this little patient, which were immediately regulated, have been tried by the heat test since the operation, and they responded at once to it, thus proving the vitality of the pulps. Although I should deprecate immediate treatment in most, or even many, of the cases of instanding teeth which are brought to us, inasmuch as they can be treated in a less risky manner by more mediate methods, yet I think many of us see cases in which we are perfectly justified, under certain circumstances, in adopting the quicker method of correcting the deformity. If the patient be operated on before the teeth have fully erupted, and the operation performed without any downward dislocation of the tooth which is to be moved, the risk of killing the pulp is, in my experience, a small one."

Mr. KIRBY mentioned the case of a patient over 30 years of age, in which an eminent dentist had taken some considerable trouble to reduce a deformity caused by an instanding lateral, but without much success. She had heard of the operation of luxation, and was extremely anxious to have it performed upon herself. The case was not completed beyond models showing the proposed operation being prepared. The model showed the cut going completely down the alveolus almost to the extremity of the root of the tooth, and the tooth and alveolus together forcibly luxated outside the bite. In such a case he should say the probabilities were that there would be no necessity to use splints to retain the tooth in its place. It would go into position with a very small amount of force, and would be retained by the bite, which would prevent the tooth growing inwards again. If the operation was carried out, there could be no doubt that it would be a success. The worst that could happen would be the death of the pulp, but in all probability that would not occur.

Mr. J. H. BADCOCK said he had experimented in two cases since they last met. The first was a patient who came on September 3, a woman aged 27. On the right side the upper teeth were rather crowded, the canine being inside the bite of the lower teeth. There was a badly decayed lateral incisor paining her very much. That tooth was extracted. Having no convenient instrument at the time for making a saw cut, the rest of the operation was put off. The following week, having injected in front and behind the canine about a quarter of a grain of cocaine in 10 per cent. solution, he with a

circular saw divided the alveolus between the canine and the central, and between the canine and the first bicuspid on the outside. He endeavoured to do the same on the inside, but owing to the position of the instrument could not work so well there. With the forceps shielded with tin foil the canine was then moved into position. As far as the pain went the patient assured him that she felt nothing whatever of the saw cut, but the pain of moving the tooth was much the same as in extraction—perhaps not quite so severe. He believed it could have been done painlessly if he had been able to inject more cocaine. Having done that, the tooth was secured with silver wire to the adjoining teeth. For the first three days the teeth were very sensitive, especially the central, which had the wire tied round it. The wire was removed, and since then the tooth had been retained in position simply by its position outside the bite. The tenderness soon passed away, and there was no sort of trouble from the first except the tenderness caused by the wire. A report about the case sent in last week stated that the tooth was alive, almost firm, and perfectly healthy. The wound in the gum had healed up. The patient said the tooth was a little sore for the first week, but no inconvenience was felt after that. When he last saw the patient himself three weeks ago the tooth was very nearly as firm as the other teeth.

The next case was that of a boy with two outstanding upper canines, two first bicuspid being carious, and on the right side an instanding second bicuspid. He gave gas, removed the two first bicuspid, and at the same time brought the second bicuspid out into line. That was tied with wire in the same way, attaching the wire to the canine, then on the inner side of the second bicuspid and round the first molar. There was no pain or inconvenience. The patient could not eat on that side of the mouth for a few days, but otherwise the tooth had done perfectly well. The operation was done about a fortnight ago. The tooth was not firm, but he had no doubt that it would be very shortly. As far as one could tell the tooth was alive, and there had been no trouble occasioned by the treatment. On October 25 the tooth was reported to be still slightly loose, but it was alive and in good position.

Mr. CUNNINGHAM said, knowing that Mr. Paterson had had some experience in this operation, he was very anxious that he should have been present. Unfortunately he had been unable to come, but he had sent some notes, leaving it

to him to use them if he thought fit. He certainly thought fit, because they were not all successes, and in a new operation they must face possible failures as well as successes.

Since reading the paper he (Mr. Cunningham) had had the opportunity of operating in a lower case, of which he exhibited the models. It was not a very typical case, showing any great utility in the operation. It was a case of a lower jaw with the right incisors outside the arch, a matter really not of any great importance, but still there was a possibility of future difficulty, and as it was so simple an operation, he thought it was worth while doing. In endeavouring to extract the central incisor, there being no opportunity of taking hold of it in the conventional way, it did not surprise him to find that it was fractured extremely low down in the socket. He incised the alveolus on each side of the tooth, and then taking the guarded forceps pulled the lateral incisor forward. The models showed the teeth in its splints simply ligatured, and a second model showed that the gum had now completely healed over the fractured root in the anterior part of alveolus, partly owing, he thought, to the more than usual vigorous way that the case was dealt with. He had brought with him a pair of Dr. Bryan's forceps. He (Mr. Cunningham) had never had an opportunity of testing the apparatus, but in certain cases, no doubt it would work well. Dr. Bryan had adopted the method of sectionising a portion of the alveolus, and, instead of trying to separate the alveolus from the tooth, he now believed it to be better to try to move the tooth with a portion of the periosteal and osseous attachment as well. Dr. Bryan was especially a supporter of the attitude taken by Mr. Spokes on this question, where he said it was peculiarly applicable to teeth in the erupting stage. In children, of course, the operation was much slighter and not attended with the same amount of risk as in the major operation as shown in the case of Mr. Russell, who was present on the last occasion. He brought the subject before the French National Dental Convention at Bordeaux, and he understood that some of those who had had the opportunity of seeing the exposition of the process at the Congress in Chicago had adopted this method of operating. He did not know what was their percentage of failures, but they spoke with the greatest enthusiasm of the success which had attended their results in experimenting in this direction. He regretted that he was not able to exhibit the photographs

shown on the previous occasion, as they had been sent abroad. He also regretted that the editor did not think it possible to reproduce the photographs in the Transactions, because of the fact that they had appeared elsewhere. So far as he was personally concerned, he had more confidence in the operation than ever.

Notes on Certain Hospital Cases of Immediate Regulation of Teeth; under the Care of Mr. W. B. Paterson.

February, 1893.—Woman, 22 years of age, came for relief of toothache in a right lower first molar, which was carious and worn down to the gum level. Periostitis was present, and the tooth had been loose for over a week. The second bicuspid in front of this tooth was sound, but its position very irregular, viz., with its masticating surface at a right angle to the dental arch, and pointing towards the tongue. The tongue was indented but otherwise normal. The space between the first molar and the first bicuspid was equal to half the size of the second bicuspid's crown. Advice being given, and consent obtained, an anæsthetic was administered. The first molar was extracted, freer inward motion being used than was necessary for the extraction alone, in order to expand the alveolar wall. The tooth extracted, a fine straight elevator was inserted between its anterior socket wall and the second bicuspid, and the bone levered away free of that tooth. Then with a pair of forceps, the blades of which were sheathed with lead foil, the second bicuspid was grasped, and with steady motion drawn up to the vertical position. The alveolar walls were as firmly pressed together around the tooth as was possible with the fingers, and a temporary splint, made out of Stent's composition, was immediately moulded, horse-shoe fashion, to the inside of the lower teeth and surrounding, but not capping, the second bicuspid. The bicuspid, now upright, did not articulate with the teeth above by the thickness of a stout visiting card. A vulcanite splint replaced the Stent, and the patient was seen every week for six weeks, when she was discharged with the tooth firm, and not painful during mastication. She reported herself in six months; the splint had been left off since her last visit to the hospital. The second bicuspid was quite firm, its colour normal, and not painful in mastication. The articulation remained spaced as before mentioned.

1894.—In two other patients of the ages of 25 and 27

years similar operations were performed upon misplaced lower bicuspid.

In Case 2 (a woman) the roots of a lower first molar were removed and the misplaced second bicuspid immediately regulated. In doing so, although the regulation force was firmly and steadily applied, the root of the bicuspid fractured low down. The tooth, however, was brought up to the vertical position and splinted. It did not articulate above by the thickness of a sixpence. I saw the case at the end of the week, and there were signs of the tooth becoming firm, although it had a tendency to cant inwards on removal of the splint. It was painful to bite on. My colleague, Mr. R. C. Ackland, who saw the case with me, reported two weeks after an increasing firmness of the tooth, and less pain in the act of mastication with the splint in—a doubtful success in fact.

Unfortunately the case was lost sight of by reason of holidays intervening; but from failure in reporting it is possible the patient may have had the tooth extracted.

1895.—Case 3 (a woman). A lower first molar, carious, was removed, and a similar regulating *modus operandi* adopted. The result was a complete failure. The second bicuspid was, with much suffering, borne with for nine days; it was then extracted. A sequestrum consisting of the septum between the molar and bicuspid, together with a portion of the sockets of each, was afterwards removed. A splint had been in use; it was made before the operation, and easily adjusted after. The bite was free in Cases 2 and 3; no periosteal inflammation existed before operation, and the misplaced teeth were sound and firm. In all three cases the inward position of the bicuspids justified alteration in view of interference with the tongue. Case 3, indeed, came to have her tooth extracted on account of occasional lingual excoriation.

A fourth case of immediate regulation promises better. It is that of a lad who had an unsightly, spike-shaped supernumerary occupying the place of an upper lateral incisor, the incisor lying inside the bite, and close behind it. The supernumerary was extracted, and the incisor drawn forwards into its socket space. But little traction force was needed the septum being slight and readily yielding, *i.e.*, without much splintering sensation; waxed silk and collodion held the tooth firmly in position. The patient having little or no spare time, and being a printer's reader, a regulating plate was out of the question. He has yet to report.

Remarks.—The question of general utility of an immediate regulation operation is one that it is premature to discuss on the evidence adduced either by the readers of the papers, or in the cases above mentioned. From a very limited experience I would simply draw attention to the following points:—

(1) That under favourable conditions, *e.g.*, where the alveolus is softened by inflammation, whether pre-existent (Case 1), or purposely induced by an operation like a preliminary saw cutting, or the extraction of an adjoining tooth, there will be difficulties in the way of obtaining suitable space for the tooth to be regulated in, and a risk of failure afterwards from suppuration and necrosis.

(2) As operative details: forceps alone will not always suffice for the work, except as in Case 4, where the patient is young and the regulation easy. The risk of injuring the tooth by the instrument is a factor to be reckoned with, especially if the root is abnormally shaped, which may often be the case. Careful splinting suggests itself as important, and the gauging of the height of the bite, and also its adjustment after the moving of the tooth, is a matter requiring most careful attention.

Mr. F. J. BENNETT said he had not had an opportunity of practising this operation, but it appeared to him that as developed by Mr. Cunningham it was a distinct advance on the earlier method. The introduction of the saw cut was scientific, and the fact of holding in view the importance of keeping intact the periosteum and the vascular supply to the teeth was another great advance. If they could with a clean saw-cut divide the tissues, place them in a proper position, and keep the periosteum in good condition, they had a great gain on their side. Another point which occurred to him in reading over the paper, was as to the relations of the antral cavity with regard to operation on upper bicuspid teeth in that region. If—as they knew—the roots of teeth frequently entered the antral cavity, then dividing the alveolus on either side in separating the bone they must in some cases break through the floor of the antrum. In such cases there must be a tendency for blood to extravasate into the antral cavity, and if so, would there be a tendency to septic inflammation? That was a thing which had always to be borne in mind. Another point was that the very cases

which appeared to do best were not quite the cases most urgently demanding such treatment. The cases in which it would be best were those of adults in which the bone was hard, and on which regulating by plate would be a prolonged operation. Then as to the importance of taking a model beforehand, and doing a preliminary operation on the model; proceeding in that way they were quite sure that the bite was correctly adapted, and were perhaps relieved of difficulties such as had been mentioned, which might otherwise follow. He hoped that they would keep an open mind in the matter, and not be eager to condemn an operation which might have a great future before it.

Mr. MATHESON said that Mr. Cunningham in reading his paper spoke of the difficulties he had met with from the buckling of the saws that he used. He would like to ask what was the diameter of the saws he now used.

Mr. ALBERT said he thought such cases as those adduced could scarcely be pronounced to be successes until a period of at least two years had elapsed. He mentioned a case of a child of 12 years old, in which, now some twelve years ago, having taken a model beforehand, he forced the instanding lateral incisor into position. It could hardly be called a success, because six months afterwards the tooth was extracted. There was no discolouration, but there was sensitiveness. He showed the case at a post-graduate course, and it created some comment. Since then he had done the operation, though without the refinements that Mr. Cunningham had invented; that was to say he had simply seized hold of the tooth with care and levered it into position. He could not say that he had ever seen a case go wrong. A fortnight ago a girl came to St. George's Hospital, aged 18, with the upper central incisor under the arch. She was placed under gas and the tooth brought into position by the forceps. It was necessary, however, to wait some years before such cases could be pronounced successful. He would have brought the cases forward, but as they knew, it was very difficult to get out-patients to attend. He hoped on some future occasion to have the opportunity of doing so.

Mr. E. LLOYD-WILLIAMS said that while he should be very loth to attempt to condemn an operation simply because it was new, he would venture to offer one or two criticisms upon Mr. Cunningham's very interesting communication. He was sorry that the operation had been treated in the paper more from the mechanical than from the surgical and pathological

point of view, and he ventured to suggest that the interest would not have been detracted from had the larger aspect received fuller attention. New operations came in from time to time. They heard much some time ago about transplantation. A good deal of noise was made about it at the time on both sides of the Atlantic; but as far as he could understand it was not an operation which came to stay, and he personally had never yet seen a case. Two dangers in the operation now before them had been already pointed out; one was that they might possibly fracture the tooth, and the other that the pulp of the tooth might die. Either of these was a serious matter—especially in the mouth of a good looking young lady whose friends perhaps magnified the beauty of the patient rather more than the prosaic dentist was apt to do. It was not, however, to these two points that he wished to call attention, but would rather refer to one or two things which had not been touched upon. First of all, there was an absolute danger of septic infection. This was a point which they dared not lose sight of, and if any serious surgical trouble were to arise in consequence of this operation, they would certainly repent—when too late—that they had not adopted perhaps a longer but certainly a much safer, method. Mr. Cunningham had been privileged to describe a new operation, at all events in name. They had heard of *plastic* operations, but had now been introduced to *plaster* operations. One thing that struck him in connection with these plaster operations—and the models were very interesting—was that the contour on the alveolar surfaces had been very carefully restored, not by Nature, but by the hand of the gentleman who had manipulated the plaster. Did Mr. Cunningham think that Nature was going to restore the contour of these alveolar surfaces exactly in the same way? Take for instance, a tooth which had to be moved with its surrounding alveolus, one-eighth of an inch—in a slice, as it were—beyond the edge of the alveolus which adjoined it, he should like to know how it was suggested that the irregular surfaces resulting were to be transformed into a new contour. The same remark would of course apply to the inner surface. This was a matter which Mr. Cunningham would no doubt be able to clear up. With regard to the fragments themselves, there was one point which was made more interesting from the fact that Mr. Nicol, in a Casual Communication that evening, had ventured to proclaim the very heterodox pathological opinion that the union of a maxillary fragment which was fractured was a true

bony one. He (Mr. Lloyd-Williams) had always been taught that union by bone never took place in the upper jaw. It was a matter which had interested him not a little; but though on the look out for specimens which might prove that this was, or was not true, he had never come across a single case confirming Mr. Nicoll's statement. He had had the opportunity of treating a few cases of fracture of the upper jaw—though they were not very common—and had always been of opinion that there had been no new bone thrown out and that the resultant union was a fibrous one. Mr. Cunningham would be able to give an opinion as to whether these fragments united simply by fibrous union as they had always been taught to believe, or whether he thought with Mr. Main Nicol, that true bony union did take place.

Mr. SIDNEY SPOKES said nothing had been advanced in the discussion against the little operation that he had mentioned at their last meeting. Of course there was a possible danger of fractured teeth with regard to the minor operation but there was no such case yet on record. He had done several other cases since the last meeting, moving altogether sixteen incisors. He had not attempted any more canines, but he was sure it was a very simple thing to move the incisors. As to the after success, his cases were not sufficiently old to stand the time test suggested in the discussion, viz., two years; but so far as he could see, there was not the least doubt that the teeth were all alive and flourishing. He exhibited another series of models showing results of operations.

Mr. HUMBY said he wished to say a word in defence of what Mr. Cunningham had called the "classical" operation. Mr. Kirby had introduced a model, and was willing to risk his professional reputation in connection with an operation which had only at present been done in plaster, and he said that it had been a failure by the ordinary mechanical method in the hands of an eminent gentleman. Whoever the practitioner might be, he thought that he ought not to have failed, and that none of the cases which had been mentioned were such as could not have been regulated by the so-called classical method if properly applied.

Mr. A. E. BAKER asked if Mr. Cunningham would move teeth inwards as well as outwards.

Mr. CUNNINGHAM said he had pointed out in his paper, that was an operation he had never yet done, but which he was anxious to try. He had thought it all out, and on the basis of his past experience had reasonable hopes of success.

With regard to the question of danger, Mr. Lloyd Williams had acted at the bogey man; he complained that the matter had been brought forward more in a mechanical than a surgical view. He (Mr. Cunningham), submitted that this was rightly called by Dr. Bryant the "Surgical treatment of irregularities," whereas the older and practical method was the mechanical treatment. The dangers mentioned were a fractured tooth and a dead pulp. Mr. Sidney Spokes had forgotten the fact that in one of his operations on children an incisor was fractured, and no doubt it was a point on which they must be careful. The operation must not be done in a careless and unscientific way. As to the death of the pulp, if it were the prettiest girl that Mr. Lloyd Williams had ever seen, and if she had an instanding canine interfering with mastication, and if by a saw cut of the alveolus he could bring out the canine and free the bite from its wrong position, he would do it; because even if the pulp should die he could fill the tooth, and that devitalised canine, after proper root-canal treatment, would be a better tooth than the living tooth displaced and instanding. He did not depart from that position, and he did not shirk the question of the admitted danger. He had said nothing on septic infection, but he had described the precautions taken to avoid it. He admitted its possibility.

In fact, one of the things that he feared was that some dentist would perhaps be led to proceed to this operation in cases where the teeth were incrustated with tartar, and the mouth reeking with bacteria and filth. That was not the condition in which to perform the operation. A man had no right to degrade a new operation by doing it in that way. He must first of all clean the mouth, and only perform the operation when it was in a proper condition. He had not the requisite knowledge to reply to the question proposed as to its being a fibrous or a bony union. He did not pretend to *know* anything about it, but his impression decidedly was that there was bony union. With regard to the contour question, Nature was no doubt the great artist in plastic operations, and they would do well to leave very much to Nature. Mr. Paterson had spoken about the bite being short by the thickness of a visiting card or a sixpence. They could not of course ensure absolute articulation, but the thickness of a visiting card was not a very vital point, if the bite were freed. With regard to the circular saw, the one he had (seven-eighths of an inch) was really not deep enough to sectionise the alveolus as one would like, but if it were

increased to an inch and a quarter, there would be much greater chance of buckling. Mr. Kirby's suggestion was very valuable. It was not absolutely necessary to use the circular saw at all; one might have a frame saw which would effect the purpose equally well, if not so quickly. Of course it was perfectly evident that an inch and a quarter saw must be thicker than a seven-eighths saw, and therefore it would not go so readily in between the teeth as the fine saw, but he believed it would go fairly well. Mr. Humby had referred to the classic operation. They could not get over the fact that the regulation of the teeth by the older mechanical means had sometimes failed, and failed at an enormous cost to the patient. Here the new operation came in, and without wishing to press it as a method of treating all irregularities, he put it forward as a new operation, enabling them to treat cases which hitherto they had not been able to treat successfully; and further, in the case of children, especially of the poorer class, it afforded a means of treating a large number of cases which would otherwise go untreated, to their lifelong detriment.

The PRESIDENT tendered the thanks of the Society to Mr. Cunningham and Mr. Spokes, as well as to those who had brought forward Casual Communications.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

A meeting of this society was held on Friday, November 1st, 1895, the President, Mr. Alfred Smith, in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome given to visitors present.

The following gentlemen were unanimously elected members of the Society—Messrs. Devonshire, Gudgeon, Hulme, Lane, Lindeboom, Pearse, Poundall, Walton Read, Riches, Round, Storey, Tattersall, Thomas, Tilley, Wing.

Mr. T. G. READ presented to the Society some curious engravings, illustrative of Dentistry during the Middle Ages. Upon Casual Communications being called for,

Mr. T. G. READ showed two extracted wisdom teeth of extraordinary size.

Mr. MOORE showed models of a supplemental tooth (lateral) occurring in the temporary dentition.

Mr. MULLORD exhibited models of abnormalities, one of a case of transposition of canine and bicuspid on both sides of the mouth ; (ii) a case of retention of the left upper temporary canine in a patient, age $15\frac{1}{2}$: this was interesting on account of the temporary and permanent canines being in a line side by side, the arch being of the normal shape ; (iii and iv.) two models of upper jaws each with two supernumeraries in the palate.

Dr. Reid Holmes then read a paper on "Twelve Months' Observations in the Gas Room."

DISCUSSION ON Dr. HOLMES' ADDRESS.

Mr. GLASSINGTON said that he had greatly enjoyed Dr. Holmes' practical address, but did not agree that the anæsthetist should adjust the prop, as the operator would place it in such a position as to be least in the way. He considered that the gags known as Hutchinson's were the best. Regarding the physical condition of the patient, Mr. Glassington thought that gas should never be administered to a person suffering from such a disease as aortic regurgitation. He was of the opinion that N_2O and air was beneficial on account of the anæsthesia being prolonged.

Mr. T. G. READ remarked that he had always found in cases of excitement following gas anæsthesia that it was a good plan to hold the patient's head firmly in the head-rest by means of the palm of the hand applied to the forehead from the back of the chair. He considered that any friends of the patient, if allowed in the operating room should be requested to remain somewhere behind the chair.

Mr. R. E. Nicholls always found that an excellent plan was to take a good look at the tooth (or teeth) to be extracted, before the application of the face-piece, so as to impress its exact position on the eye, thus saving much time. It was very important for students to treat Hospital patients in the same manner in which they would treat private patients.

Mr. ALFRED SMITH agreed with Mr. Nicholls in his remarks on the bearing of Students to the hospital patients,

as the manner acquired during Hospital Studies generally attended a professional man throughout his life. With regard to the duties of a junior student there was far more to be learnt by looking on than was generally supposed.

Dr. HOLMES having replied, the President moved that a hearty vote of thanks be accorded to Dr. Holmes for his excellent paper.

This having been given, the meeting adjourned.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of this Society was held at the Victoria Dental Hospital, Devonshire Street, on Tuesday, Nov. 5, 1895. Mr. W. Simms, President, in the chair.

NEW MEMBERS.

The following gentlemen were elected members of the Society, namely:—Mr. J. P. Headridge, L.D.S. Eng., B.Sc., and Mr. J. H. Lees, L.D.S. Eng.

CASUAL COMMUNICATIONS.

Two cases of Adenoma of the Palate, by Herbert Lund, M.B., B.C. (Cantab.), F.R.C.S., Honorary Surgeon to the Salford Royal Hospital.

Having briefly sketched the pathology of Adenoma of the Palate, and referred to the published accounts of the condition, Mr. Lund related the two following cases.

CASE I. Mrs. L—, aged 37 (?), a patient of Mr. Hughes, was first seen on July 3, 1894, and gave the following history of her trouble. In 1891 she first noticed under the mucous membrane of the hard palate on the left side, a body about the size of an almond which could be moved about easily either with the finger or with the tip of the tongue. There was much lancinating pain in the tumour, and in the mouth generally, and as some carious teeth were supposed to be the cause of this pain, these were extracted from the left upper jaw, and the pain subsided somewhat. The patient was certain that there was a discharge of pus from the socket of

one tooth which was extracted, and then the tumour diminished in size but did not disappear entirely.

Early in 1894 Mr. Hughes saw the patient, and as the tumour which was about one inch in its longest diameter, and a fourth of an inch in transverse diameter, appeared to fluctuate, it was freely incised. No pus exuded from the incision, only a little blood and broken down tissue; and the pain remained as severe as formerly. Mr. Lund found as follows: situated entirely upon the hard palate upon the left side, an ulcer, $1 \times \frac{1}{4}$, with hard rolled everted edges, yellowish base apparently leading down to bare bone. No glandular enlargement. The patient looked delicate and had been subject to neuralgia and rheumatism; there was also a history of malignant trouble in her family.

On July 6, under ether, with Mr. Hughes assisting, the ulcer was examined to find if possible, any communication between its base and the neighbouring alveolus, but without success. The whole mass was then removed with the scalpel and chloride of zinc (gr. xx. ad $\frac{1}{2}$ j) applied.

On July 9th, the pain had entirely gone, and on the 20th the wound was healed.

The mass removed was sent to Guy's Hospital for examination. The following was the report:—

“The growth is that of an adenoma of the palate which has become malignant and infiltrating. The epithelium at the edges has also commenced to infiltrate.”

CASE II. Mrs. H—, aged 47, a patient of Mr. Simms, to whom I am indebted for assisting me at the operation and for permission to publish his case. For three years the patient had noticed a lump, which seemed quite soft, beneath the mucous membrane of the hard (and soft) palate, and during the last six months this had become much larger, and at times slightly ulcerated upon the surface. The lady's father has epithelioma of the scalp, and a brother also suffers from some malignant growth.

The tumour was about $1 \times \frac{1}{2}$ inch slightly lobulated, adherent to the overlying mucous membrane situated on the left side of the hard palate, and slightly encroaching upon the soft. No enlargement of glands, no particular pain, and no evidence of suppuration, although one spot upon the surface looked like an abscess pointing. The teeth upon the side affected had been removed, and there did not appear to be any irritation from that source. Believing the case to be a repetition of No. 1, I operated on May 25th, removing the

mass very freely. On June 24th, a puckered cicatrix alone remained.

The pathologist at Guy's Hospital reported as follows :—

“In section the tumour is chiefly composed of large mucous glands, the duct of one of these being distinctly dilated, the mucous membrane shows a low warty growth, but there is no indication of malignant disease.”

Mr. Lund pointed out the extreme necessity of early operative interference in these cases.

A short discussion followed.

IMPROVED SLAB-HOLDER.

Mr. BRUNTON, of Leeds, on the invitation of the President, showed a novel form of cement slab holder, by means of which the slab was securely held in position, and yet allowed facility for changing the slab. Mr. Brunton also showed a sample of work done with the Downie body in a furnace of his own construction.

IMPROVED APPARATUS FOR ADMINISTERING NITROUS OXIDE GAS.

Mr HOUGHTON brought before the notice of the members an improved apparatus for administering gas. In its perfect form he hoped to bring it before the members at a later meeting.

GIFT TO THE LIBRARY.

The Librarian (Mr. W. A. Hooton) reported that he had received a copy of the Transactions of the World's Columbian Dental Congress, from Dr. Harlan, of Chicago, for the Library of the Society. The thanks of the Society were cordially voted to Dr. Harlan.

DEMONSTRATIONS.

Mr. E. HOUGHTON successfully demonstrated the use of his improved nitrous oxide apparatus.

Mr. RENSCHAW showed Dr. Patrick's method of making seamless gold crowns.

Mr. GRUNDY, of Batley, shewed his Hydraulic Swaging Press, and showed specimens of work completed between the metal plates as formed by the press.

The demonstrations attracted and interested a large number of members and visitors.

Dental News.

PASS LIST.

The following gentlemen, having passed the necessary examinations, have been admitted Licentiates in Dental Surgery of the Royal College of Surgeons of England :—

- Baker, William Herbert, Charing-cross Hospital and Dental Hospital of London.
- Bascombe, Edwin Cecil Dare, Middlesex Hospital and National Dental Hospital.
- Beaumont, Frederick Charles, Guy's Hospital.
- Breakell, John James, Owens College, Royal Infirmary, and Victoria Dental Hospital, Manchester.
- Chambers, Thomas Rubens, Guy's Hospital.
- Colyer, Stanley William Randolph, Charing-cross Hospital, and Dental Hospital of London.
- Dawson, William James Oliver, Guy's Hospital.
- Denham, Norman, Guy's Hospital.
- Dimock, Edward Claude, Guy's Hospital.
- Goddard, John Wood, Guy's Hospital.
- Handel, Franz Edward, Guy's Hospital.
- Hankey, Stanley James, Charing-cross Hospital and Dental Hospital of London.
- Harrison, Edward, Charing-cross Hospital and Dental Hospital of London.
- Humby, William John, Middlesex Hospital and National Dental Hospital.
- James, Benjamin Edgar, Guy's Hospital.
- Jepson, Harold Ernest, Charing-cross Hospital and Dental Hospital of London.
- Jones, Frederick Warner, Charing-cross Hospital and Dental Hospital of London.
- King, Herbert, Guy's Hospital.
- Lees, Tom, Charing-cross Hospital and Dental Hospital of London.
- Lewis, James William, Guy's Hospital.
- Ludbrook, Stephen Percy, Charing-cross Hospital and Dental Hospital of London.
- Macdonald, George Ernest, University College, Liverpool, Charing-cross Hospital and Dental Hospital of London.
- McKay, Robert, Middlesex Hospital and Dental Hospital of London.
- Marston, Walter, Middlesex Hospital and Dental Hospital of London.
- Mathews, Harold Dewe, Guy's Hospital.
- Payne, Joseph Lewin, Guy's Hospital.
- Pidgeon, Walter Herbert, Charing-cross Hospital and Dental Hospital of London.
- Relph, Herbert John, Middlesex Hospital and National Dental Hospital.

Robertson, Harry Lennex, Mason College, Queen's and General Hospitals, and Birmingham Dental Hospital.

Rose, Samuel Frank, Middlesex Hospital and National Dental Hospital.

Ryle, Arthur Buxton, Guy's Hospital.

Secombe, Clovis Leopold, Middlesex Hospital and Dental Hospital of London.

Spencer. George Ross, Charing-cross Hospital and Dental Hospital of London.

Turton, Arthur William, Charing-cross Hospital and Dental Hospital of London.

Veitch, William MacGregor, University College. Royal Infirmary. and Dental Hospital, Liverpool.

Wood, James, Owens College, Royal Infirmary, and Victoria Dental Hospital, Manchester,

Seventeen gentlemen were referred for six months.

ROYAL COLLEGE OF SURGEONS.

An ordinary Council was held at the College on December 12th, Mr. Christopher Heath, President, in the chair. The minutes of the last meeting were read and confirmed.

The following resolution was received from the Board of Examiners in Dental Surgery, and was referred to a committee of the Council for consideration and report :

The Board of Examiners in Dental Surgery have fully considered the letter from the National Dental Hospital as well as other questions arising out of it, and whilst they do not recommend that an examination in mechanical dentistry be instituted "for dental students previous to their commencing their surgical training," yet they are of opinion that the time has now come when it is desirable that the examination for the licence should be divided into two parts, and should include chemistry and physics and metallurgy. The importance of these subjects to the dental practitioner cannot be questioned, and it is generally felt that under the present system candidates do not obtain a proper knowledge of them, doubtless owing to the fact that there is no definite examination in chemistry and metallurgy.

A letter was read from Mr. Frank Marshall, Honorary Secretary of the Newcastle-on-Tyne Dental Hospital, applying for the recognition of that institution by the College for the purpose of teaching. The matter was referred to the Board of Examiners in Dental Surgery for consideration and report.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of Nov., 1895.

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|---|------|
| Number of Patients attended | 962 |
| Number of Extractions | 582 |
| Number of Extractions under Anæsthetics | 238 |
| Gold Stoppings | 75 |
| Other Stoppings | 103 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 318 |
| Crowns | 15 |
| Irr regularities | 10 |
| Total | 1341 |

J. BUTTERWORTH, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. 6d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Sklros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science

No. 672. LONDON, JAN. 15, 1896. VOL. XXXIX.

A CASE OF OSTEO-SARCOMA OF BOTH UPPER JAWS: REMOVAL.

Under the care of Mr. CHRISTOPHER HEATH,
President of the Royal College of Surgeons.

The patient, a farmer, aged 51 years, was admitted into University College Hospital on September 25th, 1895.

History. Patient has generally enjoyed good health, but had something the matter with his lungs about fourteen years ago, when the doctor gave him up. Parents were healthy, as are all his children (11 living) except one daughter who had a small tumour of the breast. He first noticed a small swelling about the size of the end of his little finger on the right side of the roof of his mouth, near the alveolar border last December (i.e. 1894). About Christmas it began to swell rapidly, and then appeared on the face. It was lanced, but there was no discharge except a little blood. In March, 1895, patient had it probed and then plugged, and syringed out for two weeks, but there was no discharge. Since then it had hardly grown at all. Patient has had very little pain, but a little pricking sensation at times. He has had a good deal of toothache, and at Christmas 1894, he had two right upper bicuspid extracted. A left upper

bicuspid became loose and was removed by the patient about fourteen days before admission.

Patient looks rather thin, but says he is not losing flesh and feels in good health. The face is much deformed by a large tumour which involves the whole of the right side from the eye downwards to the mouth, and on the left side projects as a mass which extends upwards to within a quarter of an inch of the margin of the orbit. The growth has caused great enlargement of the upper jaw, so that the central incisors project fully one inch in front of the lower incisors. On the right side it forms a marked prominence, the surface of which is somewhat lobulated, smooth, and of firm consistence particularly in the upper parts. The skin is stretched, but can be picked up off the surface of the growth, and there is no egg-shell crackling. The outline above the growth involves the orbit and pushes up the lower lid. There is some epiphora. Along the side of the nose it has a well-defined border perhaps one-eighth of an inch below the level of the bridge. Posteriorly it can be felt to project from beneath the lower border of the malar. The greater part of the outer surface of the malar is free. The growth extends outwards as far as a vertical line from the external angular process of the frontal bone. On the left side the tumour forms a small prominence and does not reach the orbit, nor far out on the cheek. The right nostril is completely blocked, and on looking into it a pinkish mass is seen blocking the nostril. On the left side the nostril is free, but somewhat narrowed internally. The alveolar border is much thickened and its outer surface is convex, and projects beyond the border of the cheek. The teeth (centrals and left lateral incisor) are quite loose, as are also the two second molars (one on each side). The growth involves the whole of the hard palate which is quite flat and projects a little lower on the right than on the left side, and on pressure is of about the

same consistence as the rest of the growth. There is no tendency to ulceration except where the right lower bicuspid fits into the palatal surface. The soft palate is quite free, and on introducing a finger behind it the posterior nares are found to be free, and no growth is felt. There are no enlarged glands in the neck. *Urine.* No albumen nor sugar.

Operation. On October 2, 1895, at 2 p.m., under chloroform, by Mr. Heath. Shortly before the operation an enema of ℥ii. of brandy and ℥iv of warm water was given. A preliminary laryngotomy was performed by a single transverse cut and a tube inserted. As the patient did not breathe well, it was taken out and an ordinary flat tube inserted. A little blood-clot was sucked out of the tube. A sponge on a string was placed in the pharynx. The lip was then divided in the middle line, and the incision extended and carried up along the side of the nose to the corner of the orbit on the right side, and a flap rapidly reflected off the surface of the tumour. The flap was very thin, but the surface of the tumour was slightly encapsuled, and did not invade the skin. The flap was reflected off the tumour on the left side, and the bleeding was moderate. Bull-dog clips were placed on the flaps and the soft cartilaginous septum was cut through and pushed up. Bone forceps were applied and the bony septum divided, and also the nasal process of the superior maxilla on the right side; the periosteal elevator was inserted above the growth and separated from it narrowly by forcible traction the main mass came away cleanly in one piece. The bleeding from it was moderate. At the posterior part there remained a portion of the hard palate with the two molar teeth. Several other large masses of growth and bone were cut away with scissors until the whole of the hard palate was removed, the attachment of the soft palate to it being divided; and as the latter structure was not diseased it was not removed. The whole growth was completely removed.

The bones of the face were completely destroyed, so that no sawing was necessary. The whole of the hard palate on the right side had disappeared, its place being taken by growth. On the left side the molar was embedded in normal bone and this was cut away. No vessels were ligatured. The wound was dusted with Iodoform, the flaps were brought together and held in position by two hare-lip pins. The sponge was removed from the pharynx, but the laryngotomy tube was left *in situ*.

Parts Removed. These consist of the greater part of the two upper jaws which are invaded throughout by the growth—together with four fragments removed separately, the whole mass weighing $11\frac{3}{4}$ ounces. The growth has destroyed the bones in all directions, it is of firm consistence and its shape is that of the jaws much enlarged. In the middle line is the cartilaginous and bony septum which has been divided, on the right side of which the growth from the palate upwards measures $2\frac{3}{4}$ inches. The upper part forms a rounded prominence which has destroyed the upper and anterior surfaces of the maxilla and projected into the orbit and on to the face; this part is covered by loose alveolar tissue to which it is adherent. On the inner side it is covered by the mucous membrane of the nose and it projects up against the septum completely blocking the nares. The outline of the turbinate bones cannot be made out. Adherent to the upper and inner part is a small, bony, mass which is the divided nasal process. On the left side there is a smaller mass which occupies the antrum and has destroyed its anterior and inner walls but it does not reach to the orbit. On the right side the infra-orbital nerve is seen running across the side of the growth about $\frac{1}{4}$ inch above its highest point; and an indistinct bony ridge is felt evidently representing the orbital plate.

The growth is uniformly hard and of pinkish colour. On section it is pale pink with yellowish spots scattered through

it. The yellowish spots are quite soft and can be picked out; they are evidently spots of degeneration. The section feels rough and gritty from fragments of bone scattered through it.

Microscopy. The growth is composed of a mesh-work of fibrous stroma surrounding spaces which are filled with masses of small, round and oval cells; in some parts the masses of cells have fallen out of the spaces. The stroma is fibrous but contains numerous cells with oval nuclei and staining deeply. The cells are round and oval, and small with large nuclei, and are arranged in large masses having shrunk away from the stroma. No stroma is seen passing amongst the cells. In the centre of some of the masses of cells are masses of homogeneous material staining reddish with eosine; these appear to be centres of (a) ossification (b) calcification. The cells have the appearance of Sarcoma. The growth is probably Sarcoma with ossification.

Oct. 2. Immediately after the operation the patient's pulse was good, 96. Respiration normal. As soon as the patient could swallow, he was given half an ounce of brandy in one ounce of warm water.

Oct. 3. Pulse continues good. Patient has been sleeping during several hours in the night. He complains of no pain, but suffers considerable discomfort from the laryngotomy tube. He can breathe by the mouth or by the tube. Patient swallows his milk fairly well. Temp. 9 a.m. 98.4.

Oct. 4. Patient takes his food well; the tube was removed this afternoon and the wound dressed with cyanide gauze. The mouth is douched with water and then mopped out with Sanitas twice a day.

Oct. 6. Patient is well, but says the brandy disagrees with him.

Oct. 7. Mr. Heath removed the Hare-lip pins.

Oct. 12. The sutures were removed, the skin wound is healed and the laryngotomy wound nearly closed.

Oct. 25. Patient was discharged. Face and lip fallen in. The nose is twisted over to the right side. The cavity in the mouth is contracting; the soft palate is tightly stretched across and helps to fill up the gap.

NOTES ON THE FOREGOING CASE.

By Mr. HUBERT W. MOORE.

Dec. 3rd. Mr. Sidney Spokes brought the patient from the University College Hospital to the National Dental Hospital, to see what could be done to replace the parts removed by the operation. Mr. Spokes kindly gave the case to me to carry through. The patient's speech was very much impaired; he was obliged to live on liquids, and even those he had considerable difficulty in swallowing. On examining the mouth a large oval opening was found in front of the soft palate; thick cicatrices extended from the margins of the cleft on either side to the external alveolar ridge of the lower jaw. There was, therefore, nothing hard to bear the pressure of a denture, except perhaps the anterior and posterior borders of the cleft which were fairly firm. The upper lip closed about an inch behind the lower incisors. The patient could only open his mouth a very little (and that with difficulty) as he complained of a stiff jaw, which he said he had had for a long time before the operation. It was at first resolved not to put in any teeth; but simply to make an obturator, and thereby restore as much as possible the patient's speech, and give a little more comfort in swallowing.

I took rough impressions of the opening both in wax and in Al composition. I could only do this by inserting a sufficient number of small pieces in a very soft condition. These were cast and a special tray then made.

Dec. 10th. After five futile attempts, I succeeded in getting a fairly good impression in plaster, which was got out in six pieces. I cast it and made an obturator in wax, and as this was concave all round from above downwards, I was obliged to break the model in two to get it free.

Dec. 13. I tried the wax dummy in the mouth, it fitted very well; the patient could not get it out with his tongue, and his speech was immediately improved. The obturator held in so well that it was decided to make a denture and attach them when in the mouth as it did not seem possible to get both obturator and denture into the mouth when joined together. I took an impression in Al composition with the obturator *in situ*, also of the lower jaw and the bite. I cast the impression, &c., and set up four teeth on either side, two bicuspid and two molars.

Dec. 17. I attached the obturator to the denture and found that I could get both in with a little manœuvring. Accordingly the whole was vulcanized in one piece, the rubber being hollow at the thickest part.

Dec. 18. Put the piece in and adjusted the bite. The man's speech was very much improved, and when I saw him three hours later, when he had had something to eat (soup), he said that he had no difficulty whatever in swallowing.

Jan. 2, 1896. Patient wrote to say he was getting on well so far as the obturator and teeth are concerned. His wife removes the apparatus for him without any trouble.

PROF. GRAY has recently adopted a very satisfactory method of using gutta-percha. After drying the cavity he saturates it with common resin cut in chloroform and then presses in heated gutta-percha. It adheres to the walls like cement and does not pull away. He has found it very satisfactory in the mouths of his own children where he has the opportunity of observing it closely.

ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 6.)

TUMOURS OF THE MAXILLA.

Some of the tumours of the maxilla have already been described in the pages dealing with Odontomes, Tumours of the Gum, and Tumours of the Palate. The following pages will be devoted to a description of the remaining tumours of the maxilla, including those found within the antrum.

CYSTIC DISEASE OF THE ANTRUM.

Small cysts about the size of a pea or a marble are sometimes discovered in the interior of the antrum in dissecting room subjects; they have probably caused no symptoms during life. Similar cysts when larger or more numerous may distend the antrum and produce swelling of the face.

According to Giralde's, these cysts result from dilatation of the glandular follicles of the mucous membrane. They contain at first a clear viscid fluid, but later the fluid becomes flaky from the presence of cholesterine, or may become purulent.

Cystic distension of the antrum was formerly designated "hydrops antri" on the supposition that the antrum became distended with mucus owing to blocking of the ostium maxillare.

The symptoms of cystic distention of the antrum are almost identical with those of dental or dentigerous cysts growing into the antral cavity and it is but rarely that a certain diagnosis can be made until the antrum has been

opened and explored. When suppuration occurs the symptoms are those of empyema of the antrum.

Treatment. The antrum should be opened through the canine fossa and the cysts scraped out. During the healing process the cavity must be kept clean by syringing with suitable antiseptics.

POLYPUS OF THE ANTRUM.

Polypi of the antrum are somewhat rare. They closely resemble nasal polypi in structure and the same doubt is entertained in both affections as to whether the tumour is of inflammatory origin or a true new growth. They are well supplied with blood vessels and consequently bleed readily when interfered with. In some cases they are semi-malignant or may be the forerunners of malignant disease.

Polypi of the antrum do not often give rise to definite symptoms of their own. They are most often discovered when the antrum has been opened and explored on account of prolonged suppuration. Sometimes, however, they grow to sufficient dimensions to cause distension and absorption of the walls of the antrum and encroach upon the neighbouring cavities especially the nose. The treatment consists in removing the polypi through a large opening in the canine fossa and scraping away the diseased mucous membrane with which they are connected.

FIBROMA.

Fibromata of the upper jaw may spring from two situations, viz., the periosteum of the alveolus and that lining the interior of the antrum. Fibroma of the alveolus has already been described under Tumours of the Gum. It is probable that many cases described in the older works as fibroma have really been instances of fibrous odontomes which have escaped recognition. Fibromata arising within the antrum grow very slowly, but if allowed to remain may attain a

considerable size and may cause much damage to the surrounding parts ; the walls of the antrum become absorbed and displaced allowing the tumour to escape from the antrum and to project into the orbit, into the nose, into the mouth, into the zygomatic fossa and under the cheek.

ENCHONDROMA.

Enchondromata of the maxilla are very rare. They occur in young subjects and may grow either on the surface of the bone or inside the antrum. They are of slow growth and innocent in nature, although sometimes recurrence may take place after removal. They are very hard and usually nodulated on the surface; on section they present close-set nodules or masses of cartilage partly and irregularly ossified and intersected by more or less fibrous tissue. They may attain a great size and produce distension and destruction of the maxilla and other facial bones in the same manner as fibromata.

Some of the enchondromata formerly described were probably examples of chondrifying sarcomata.

OSTEOMA.

True osteomata of the maxilla are very rare tumours. Many cases hitherto described as such have been examples of leontiasis ossea, hard odontomes and ossifying sarcomata. Irregular outgrowths of bone are sometimes met with on the alveolar border, but they are of no clinical importance.

NEUROMA OF INFRA-ORBITAL NERVE.

Bland Sutton has recorded a case in which a neuroma composed of myxomatous tissue grew from the infra-orbital nerve and invaded the cavity of the antrum. The surface of the tumour was covered with a layer of mucous membrane furnished with ciliated epithelium. The tumour had caused intense suffering.

SARCOMA.

Sarcomata are the commonest and most important tumours of the maxilla. As in other bones they may be central or peripheral. Central sarcomata grow from the cancellous bone between the shells of compact tissue. They may be myeloid or round-celled in structure. Myeloid sarcomata are much rarer in the maxilla than was formerly taught, many cases thus described in our museums and in the older works being examples of fibrous odontomes containing a few osteoblasts, and sarcomata arising in the follicles of developing teeth. They usually grow in connection with the nasal process and occur in young subjects; they are of slower growth and are less malignant than the other varieties of sarcoma. When growing from the alveolar process and projecting on the gum they constitute the "myeloid epulis" already described. They may also bulge into the antrum, distend its cavity, and absorb its walls like other tumours. In some cases of myeloid sarcoma the blood vessels are so numerous that they cause the tumour to pulsate and give it a structure somewhat resembling erectile tissue; they are known as vascular tumours or vascular sarcomata.

Sarcomata of tooth follicles are composed of round and spindle cells with a few myeloid cells interspersed. They occur only in children and usually involve the germ of the first permanent molar. They are at first encapsuled, but eventually reach the surface, ulcerate and give rise to hæmorrhage. The neighbouring glands may become affected.

Peripheral or periosteal sarcomata may spring from any part of the maxilla. They frequently grow from the periosteum of the antrum, distending its cavity and behaving clinically like a central tumour of bone, although pathologically of periosteal or peripheral origin. They are fairly common on the gums, and rare on the palate. In structure they

may be either round-celled or spindle-celled ; the latter variety often contains cartilage and bone.

The maxilla may also be invaded by sarcomata starting in the nose, naso-pharynx or orbit.

EPITHELIOMA.

Epithelioma of the maxilla occurs in persons beyond middle life, usually about 45 or 50. It may start in the gum, the palate, or in the interior of the antrum. Epithelioma of the gum and palate has already been referred to.

Epithelioma of the antrum may be primary or secondary, i.e., the disease may start in the antrum, or it may invade the antrum after having started in the gum or palate. Primary epithelioma is a rare disease : it forms a very vascular tumour of a villous nature which fills the antrum, and rapidly perforates its walls in various directions, causing at the same time a certain amount of distension of the cavity, but not nearly so much as the sarcomata. It may be composed of columnar cells, like those covering the mucous membrane of the antrum, or of spheroidal cells like those lining the mucous glands.

Secondary epithelioma is nearly always of the squamous variety. It is a very insidious disease ; no definite tumour is formed, and there is no distension of the antral cavity, but there is extensive and very rapid destruction of its bony walls. The disease is often first discovered on extracting a tooth with a piece of soft growth attached to the roots. The socket does not heal, but soon becomes filled with a fungating mass ; it will then be found that the socket is in direct communication with the antrum, and that the latter is already diseased. To this disease the name "*épithélioma térébrant*" or "boring epithelioma" is often applied.

In all forms of epithelioma of the jaws the disease is very rapid and the lymphatic glands in the neck are very exten-

sively involved. The size of the lymphatic swelling may be out of all proportion to the primary disease, so much so that the patient is often led to seek advice on account of the glandular swelling, the primary growth being discovered only on careful examination of the mouth. The enlarged glands are at first very hard, but they soon soften to such an extent that they may be mistaken for an abscess.

Diagnosis of Tumours of the Maxilla.

To make a correct diagnosis of tumours of the maxilla is often very difficult, sometimes impossible.

The history of the case must be carefully considered, the more rapid the progress of the disease the more likely is it to prove malignant.

A careful physical examination must be made ; the points which must be especially noted are the condition of the cheek and the characters of any swelling there may be on the face or inside the mouth, the condition of the hard and soft palate; the nasal cavity must be examined by means of a speculum and artificial light aided, if need be, by careful use of the probe ; in doubtful cases the finger may be introduced into the naso-pharynx to feel for any extension of growth in that direction. Sometimes the diagnosis may be cleared up in a doubtful case by extracting a tooth, and so either evacuating pus or other fluid, or bringing away a piece of growth which can be submitted to microscopic examination. An examination of the submaxillary glands should not be omitted.

Having made a thorough examination, it is necessary to determine (*a*) whether the swelling is solid or fluid, (*b*) whether it is innocent or malignant, and (*c*) its primary seat.

(*a*) In cases of distension of the antrum by fluid the uniform enlargement of the cavity, the elasticity and even fluctuation which may sometimes be detected on palpation may suffice to make the diagnosis, but whenever there is any

doubt on this head the antrum should be perforated with a small trocar introduced into the most prominent part of the swelling. It has happened that experienced surgeons have made the incisions necessary for removal of the maxilla and have then found out that the supposed malignant growth was nothing more than an abscess.

(b) So long as the tumour is confined within the antrum much difficulty will be experienced in determining whether it is innocent or malignant, but when a malignant tumour has passed beyond the cavity of the antrum it grows with great rapidity, insinuates itself extensively amongst the bones of the face, creeps through fissures and foramina and encroaches on the orbital and nasal cavities. Obstruction to nasal respiration and repeated attacks of epistaxis are suggestive of malignant disease. Early and extensive infiltration of the lymphatic glands points to epithelioma; in sarcoma they frequently escape infection.

(c) When the tumour occupies the interior of the antrum the buccal, nasal, palatine and orbital walls are expanded and the line of the teeth is often disturbed, but when the tumour springs from the malar bone, the teeth and palate are unaffected, the swelling being limited to the face and the sulcus between the cheek and the gum; when the tumour springs primarily from behind the maxilla it pushes it bodily forwards without deforming the outline of the bone itself, but it sometimes happens that such a tumour may find its way into the antrum and behave as one originating in that cavity.

PHOTO-MICROGRAPHY.*

By JOHN W. PARE, M.D. Edin., L.D.S. Eng.

Mr. President and Gentlemen,—When your indefatigable secretary requested of me last January to read a paper before this Society, I agreed to do so, as I was informed that I could choose my own subject, so long as it would be of interest to the members, and that the paper would not be required till this session. You have had excellent papers read to you on the subject of “Caries,” “Dead (*sic*) Teeth,” “Neuralgia,” “Fractured Jaws,” and “Anæsthetics,” till you know as much of the subjects as the gentlemen who have given them, and I thought that for once in a way you might care to listen to a subject which to many of you is unfamiliar, and if it should prove prosy you could, like the clergyman in “Valentine Vox,” fold your arms and think deeply *with your eyes shut*.

Photo-micrography is the art by means of which the image of a minute object is enlarged and photographed through the combined instrumentality of a microscope and camera, and so can be seen by the unaided eye. Micro-photography on the other hand consists in reducing the image of a large object to such a degree that when photographed the subject is so small that it cannot be distinguished by the unassisted eye.

Before the subject of this paper was known, all plates, figures, and representations of microscopic objects were drawn by artists who had the microscope before them, and who alternately looked down the instrument, and then drew a little, and so the figure was made. Now if the artist were the histologist, and he thought he had discovered something new, it would be almost impossible for him not to exaggerate the points that he wished to show at the expense probably of

* Read before the National Dental Hospital Students' Society.

the appearances that were there. Or he might draw the figure through the assistance of the camera lucida ; by this means the magnified object is so reflected over a piece of paper that it can be easily drawn. But here again error may step in, owing to the enquirer drawing what he *wishes* to see, instead of what he actually *does* see.

In photo-micrography we have the means of obtaining very good representations of the minute objects photographed without the aid of the artist, and you will be able to compare the photographs thrown on the screen by means of the oxy-hydrogen light and lantern slides with the original slides under the microscopes from which they are taken.

As in all other work, difficulties beset us at every turn, and disappointment to the beginner is often and severe, and I propose in this paper to point out how I do the work myself and the apparatus I use.

To ensure success the room used must be free from vibration and for that reason, instead of having our studio at the top of the house, it should be placed in the cellar; the table should be steady and rigid, and if such an apparatus is used as in the figure, firmly clamped to the base board, but for apparatus which I use myself sufficient steadiness can be obtained by placing the camera and microscope upon bundles of periodicals or newspapers.

The instruments required are the microscope and camera with condenser, mirror, and illuminant.

The Microscope.

The stand or pedestal should be very strong and rigid, and the pillar should be fixed to it by means of a pivot, and then the horizontal and vertical position can be obtained at will. The stand should have placed upon it a "stop" so that when we wish to use the pillar in the horizontal position (and this is, in the great majority of cases, the position worked with) it can be done quickly and accurately. The pillar

should also have a coarse and fine adjustment and the latter should be accurate so that fine focussing may be done with precision and no "time lost." With poor fine adjustments the turning of the screw slightly does not alter the focus for a time, and then suddenly it will go beyond what was required. The objectives should be of the very best, as no good work can be done with poor lenses, and corrected for photography. Lenses may have the following faults if "uncorrected."

1. *Spherical Aberrations.*

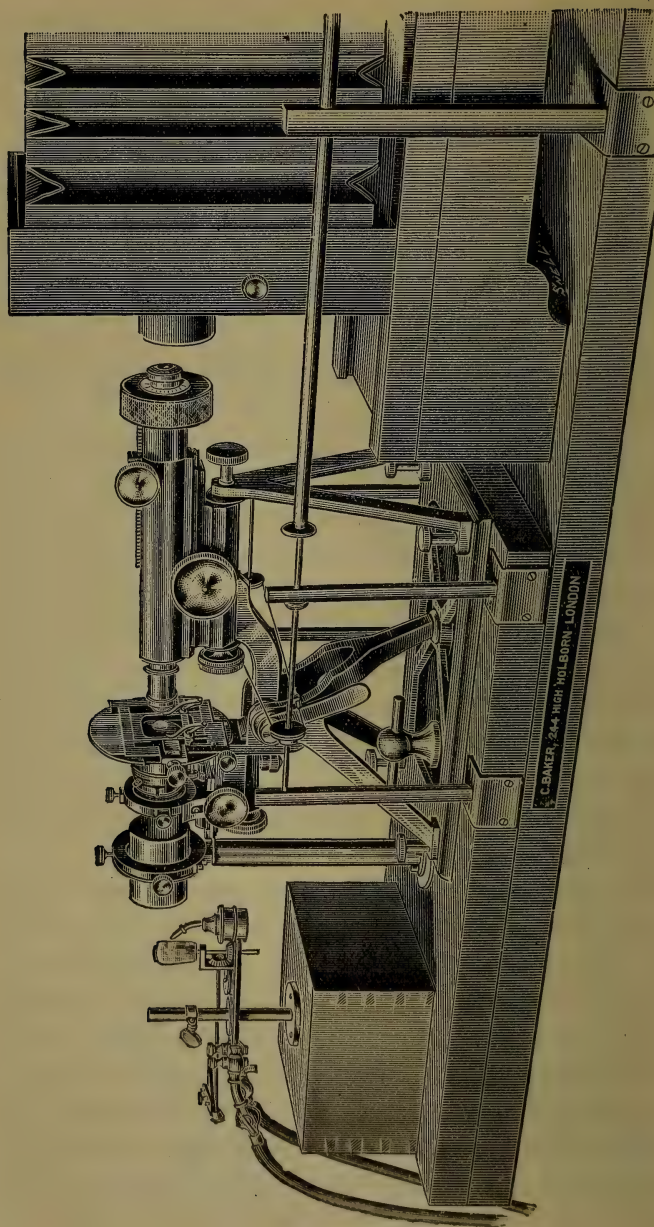
This is brought about by a spherical surface refracting the rays of light differently.

This aberration is overcome by using a diaphragm to cut off the peripheral rays and also unfortunately much of the light; or by having two convex lenses in the ocular (eye-piece) so that the internal rays of the one becoming external in the other, and vice versa, the over refraction of one compensates for the under refraction of the other. The best way, however, is to have converging and diverging lenses placed in the objective at certain definite distances so as to bring the axial, peripheral and intermediate rays to a common focus.

2. *Chromatic Aberration.*

A microscope with an objective uncorrected for this "colour fault" is useless.

White light is made up of different coloured rays which vary in refrangibility. The violet rays are very easily bent, whereas the red ones are not so, consequently the focus of the two is not common, and in addition the foci of the other colours are intermediate. This condition uncorrected makes a colourless object coloured, but by using two prisms of different composition, say flint and crown glass, the different coloured rays are brought to the same focus, and the image of the colourless object remains colourless.



3. The third fault is owing to the fact that the rays of light which cause the chemical change to take place in the sensitised film on the dry plate, come to a focus before the visual ones, or in other words the visual rays are less refrangible than the *actinic* ones.

This aberration must be corrected, or otherwise the image seen on the ground glass in the camera, will not appear on the negative, because the visual rays are unable to affect the sensitised plate. This difficulty, however, is overcome in the same way as the preceding ones, viz., by fixing a double convex lens behind the objective or altering the ocular, the former being the better way.

The ocular or eyepiece is used by many, especially by beginners, because by that means they can the more easily get rid of the "flare spot" so common with the beginner. But if an ocular is used, the objective must be of the very best, because whatever faults the latter has, the former magnifies them. The ocular simply magnifies the image of the objective.

Behind the stage there should be a condenser, and an achromatic one for preference. It should always be used for high power work. Diaphragms also are useful, the larger ones first so as to see the object clearly, and then the small one to photograph with, thereby cutting off the circumferential rays.

For low power work a bulls-eye condenser must be used. This has a plano-convex lens, and should always be placed at right angles to the illuminant and to the object.

The Illuminant may be the electric, lime, oil, or daylight, but very good work can be done with a flat-wicked petroleum lamp in the oil of which is placed a piece of camphor. The latter lamp should be placed on a high-low stand, and with the aid of a condenser is sufficient to obtain photos with a one-sixth inch objective.

The tube of the microscope should be lined with black

cloth or dull black paper, or otherwise flare spots and halation will be the result, and if there is still a tendency to this, then an ocular (from which the lenses have been removed) can be pushed down the tube to act as a diaphragm.

The Camera. Any light-tight camera will do, and in fact it is not necessary to have one if the microscope and illuminant are placed in a light-tight box with a hole at one side for the pillar to protrude through; of course there will have to be a rest for the plate to be fixed in, and the room will have to be in darkness during the exposure.

If an ordinary photographic camera be used, the lens will be dispensed with as the objective in the microscope does its work. The slot for the dark slide to run in should be smooth and should allow the slide to slip in without jerking. If the camera is placed upon cushions, and when the dark slide is placed in position, movement will invariably be produced, but on allowing the parts a little time before exposing the plate, it will usually be found on developing the negative, that the position, before the movement, has been regained. This is not so with fixed stands or cameras placed on hard substances. A moveable front and back are a great advantage, as then the image can be centred on the screen with the least amount of difficulty. If the camera has a door opening at the side, then the ground glass can be dispensed with, and a white card used instead; by this means with the door open and the card in position, one can stand close to the microscope to focus or move anything required, and at the same time see the image on the side of the card nearest the microscope.

Having now described the different parts of the apparatus, the component parts must be placed in a straight and horizontal line, so that the centre of the card or screen, the object (to be photographed) on the slide, the condenser and the luminant are on the same plane. If the apparatus is such

as figured, then all the parts can be fixed to a board, which in turn is fixed to the table, but if it consists of an ordinary camera, the better way is to place it on periodicals or cushions, and the microscope and other accessories on the table.

In the apparatus figured, that part of the base-board on which the microscope rests, rotates on a pivot so that the microscope, condenser, illuminant, &c., can be moved away from the camera without altering the relative position of each of the former. By this means a slide can be examined with ease, and having found the best part to photograph, the board is turned back opposite to the camera.

By means of "stops" here and there the different parts of the apparatus when apparently very much disarranged can be accurately centred in a few seconds.

At the side of the base-board is placed a thin iron rod with milled head at the "back" of the camera and a wheel with pulley opposite the fine adjustment (which here has a groove at its circumference) by this means one can, whilst seated at the back of the camera, fine-focus the object with ease, although the latter may be 50 inches away.

The tube of the microscope should fit the camera so as to be light-tight and when exposure is going to be made the microscope and camera should be covered with a black cloth so as to guard against light getting through joints or pin point holes in the bellows.

Having got all the parts ready with a good disc of light on the screen, with perfectly defined borders and no flare spot or halation, I select my microscopic object and place it on the table of the microscope, and turning aside the table with the microscope &c. upon it, a good part of the specimen is chosen, after which the base-board is replaced, the connection between the mouth of the pillar and camera is closed and the cloth is thrown over both. Now fine-focus on the screen, having opened the diaphragm to the widest in order to get as much

light as possible, and when this is obtained shut down the small diaphragm, put in the sensititised plate and expose. If a heavy cart should happen to pass by, simply place a newspaper in front of the illuminant till quiet and steadiness has once more returned. The length of exposure is only learned by experience and so many factors enter into the consideration that I may mention some.

1. Brilliancy of illuminant.
2. Size of aperture of substage diaphragm.
3. Rapidity of plate.
4. Thickness and colour of object, e.g., carmine takes much longer exposure.
5. Density of the colour of the screen.
6. Amplification or power of the objective.

In the horizontal method only specimens that are fixed and immovable can be photographed. I was very much puzzled one evening, how it was that although I saw the specimen perfectly on the screen, yet I got nothing on the negative or only a portion of what I saw. At first I thought the cushions had given too much and not returned, then the slips had let the glass slip slide down, but finally looked at the specimen itself and saw it gradually slide about under the cover slip according to the position it was placed in.

I always use now "isochromatic" plates, as they will photograph colourless objects as well as coloured ones, whereas ordinary ones give incorrect gradation of shade with coloured objects. The coloured plate that I pass around shows this admirably; it is taken from the pamphlet on 'Isochromatic photography,' issued free by the Ilford Dry plate Company. When these plates are used it is a great advantage to use coloured glass screens between the illuminant and the condenser. In ordinary photography the screen can be placed anywhere in front of the plate but this is not so photo-micrography.

HINTS.—

Always use the same kind of plates and get used to them; changing about from one maker to another is a mistake, and if you use Ilford plates or Edward's plates, use Ilford or Edwards' formula respectively. Always make a record at each exposure of length of time, size of diaphragm, size of objective, colour of object or of screen used, and rapidity of plate also.

Always (except when experimenting) use same strength of developer and fixant and note the time required in developing. Always retain your bad negatives for reference because then you can by comparison tell to a few seconds how long you need expose.

Negatives should not be retouched; the art of retouching as regards this work is better left unlearned.

In trying to get a photograph of a specimen where the whole is not in one plane don't focus between, but get a good photo of each part separately, otherwise only an obscured one is the result.

For moveable specimens the vertical arrangement of microscope and camera is necessitated, and for opaque objects the light must be thrown upon the specimen, and not transmitted through as hither-before described.

For works of reference, I refer you to Mr. Mummery's paper on Photo-micrography in the Transactions of the Odontological Society, to Mr. Hopewell Smith's on "Dental Histology," Mr. Charters White on "The Microscope and how to use it," and Mr. Pringle's excellent work on Photo-micrography.

DENTAL MECHANICS.

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PLATE WORK.

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A few remarks on these tools may not be out of place.
The bone, or rather horn, mallet is shown in Fig 11.

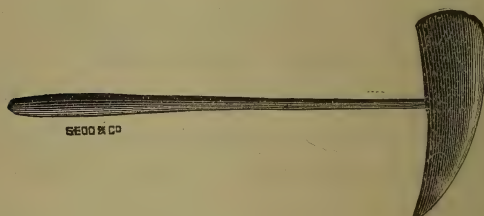


Fig. 11.

The wooden mallet is usually made of box, holly, or other hard wood. The head is about one and a half inches in diameter and about four inches long, and the ends are tapered to a wedge shape. A hole is drilled through the centre of the head and a handle fitted to it. In the diagram the artist has made the handle rather too slight.

The young beginner should be instructed to use the mallet as sparingly as possible, as this tool is only meant to get the plate roughly into position, not to make it fit the model, as might perhaps be imagined, from the generous manner in which it is sometimes used. The effect of this treatment is to bruise and destroy its surface, so rendering it more difficult to give the final finish to the case.

The plate from this stage should be placed in Hydrochloric acid to clean it from all impurities prior to annealing.

Where we have a plain upper or lower to deal with, we can approximate the plate somewhat to the alveolar border, by first swaging it into a triangular groove, cut into a piece of wood, (see fig. 12). This gets it somewhat into shape

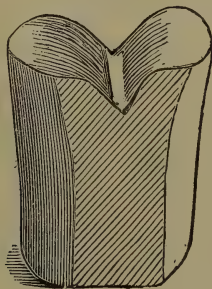


Fig. 12.

without hardening, or bruising the gold, as would be the result if beaten entirely into shape on the metal model. The plate is now ready to place in the lead or counter-die ; this should not be deeper than is necessary as it makes the swaging process more difficult.

The natural tendency of a plate is to slide backwards in the counter ; to counteract this it should be placed somewhat more forward than is required. This slipping backward in obstinate cases may be controlled in another way, by cutting a nick in the lead, at the point corresponding to the part where the posterior edge has to extend. If the posterior edge of the plate is fixed in this nick, it effectually prevents any backward movement. This latter plan should not be resorted to unless the plate cannot be controlled by the means previously described. The plate having been placed in position, the counter-die is laid on an anvil or on an iron weight, so

formed, that it rests upon the leg. The zinc model is then placed in position, and given a few gentle blows with a hammer or other suitable weight. The plate should then be removed from the counter to see if it is going into its proper position.

Should the result of the examination be satisfactory, it should be placed in H.Cl. for a few minutes and then annealed, after which it is returned to the counter to receive half a dozen heavy blows with the hammer or weight. It is as well to interpose a sheet of thick paper between the plate and the surface of the lead counter; it permits of its more easy withdrawal. It should now be carefully examined and any buckles or doubling of the plate or hollow spaces, between the plate and model, must be punched out with a broad-ended punch or if the plate is split, it should be soldered up to prevent its extending further. We must, however, note, that every time the gold plate is stamped between the metal dies, it must be cleaned in H.Cl. before any soldering or annealing takes place, as the presence of lead or zinc on the heated gold would be seriously detrimental to it.

A few more heavy blows may now be given to the plate which should have the effect of driving it well home on the model. Of course, perfection in swaging is only to be obtained by constant practice. The zinc model with the plate in position, is now fixed in the vice and the plate held in its place by means of the stirrup. (Fig. 13) It will be seen that one end of the band or stirrup passes across the model; to make traction in it, the foot is inserted in the other end seen below the vice.

We must now take punches (see Sec. 2 Dental Laboratory) and carefully chase round the necks of the teeth and between the rugæ on the palate or into any depression where it has not been driven by the dies. The chasing should be done with suitable punches, some sharp and tapering, others round-

ended, in fact the ends should correspond to the situation where the plate has to be forced into, and should be done very neatly so as to avoid the necessity of running solder into the marks, more especially those in the palate where the

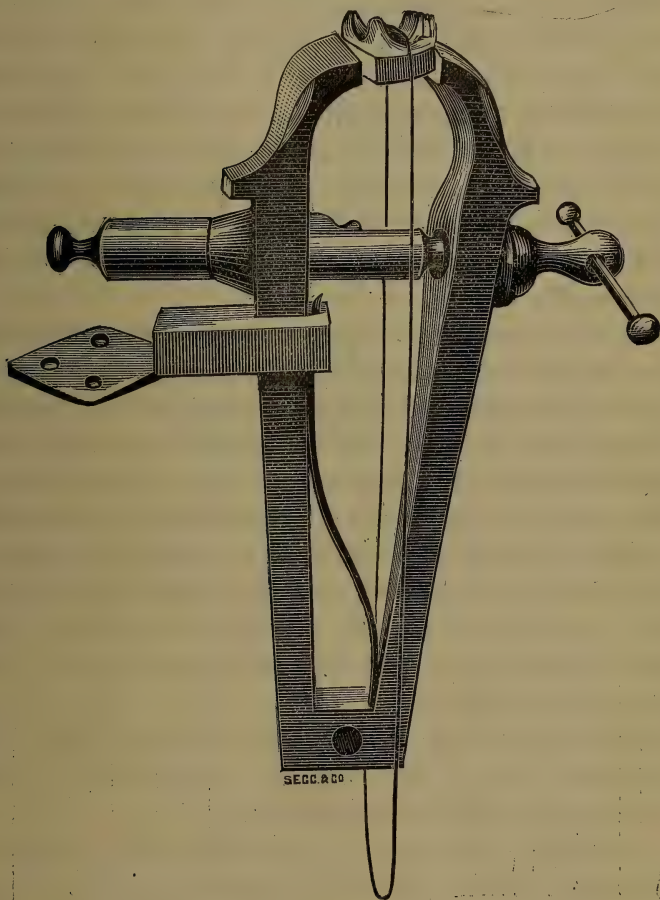


Fig. 13

presence of solder would detract from the richness of the gold and the beauty of the work ; but round the necks of the teeth it rather adds to the finish and strengthens the case.

After chasing, the plate should be trimmed to the right size with nippers and filed into shape, the edges made smooth, and, in an upper case, the posterior edge of the plate should be bevelled to the surface of the palate. Some dentists instead of chasing the plate around the necks of the teeth, use a tin counter-die to finish up the swaging process; this to my mind does not do its work as well as the punch. After the usual "pickling" (the term given to the process of cleaning the plate in H.Cl.), and annealing, it is ready for the last stamping which should be done on the best zinc cast, interposing between the plate and counter-die, as before, two or three thicknesses of paper. After stamping, the plate should be thoroughly cleaned.

We may now look at our plaster model, and try the plate on it, having first of all ascertained that it fits the best zinc cast, and presents no sharp edges to abrade or rub the more delicate plaster original. This is a point to be observed. The plaster model should be regarded as something that must be treated with the greatest care; it should not bear, even after the work is finished, the evidence of its having been worked to, but should be as perfect when the work is completed as when it was commenced. We may then rest assured, if our model is correct, that the plate will, when placed in the mouth, be a perfect fit.

On the other hand if the plaster teeth are rubbed, the plate when tried in will rock and spring about in every direction, and never feel comfortable.

In swaging up gold, or in fact any plate, the most prominent parts of the zinc model suffer the most, this flattening or rubbing of the elevations on the zinc model will in all probability cause the plate to rock on the corresponding parts of the plaster model, by reason of the concavities in it not being deep enough. By gentle pressure on the plate we are enabled to localise the place or places where it rests, and to put

a pad consisting of one or two thicknesses of brown paper or lead foil on such elevations on the zinc model, and putting the plate in position on the model to give it two or three heavy blows in the counter-die.

The pad of paper or lead is to deepen the concavities in the plate, by restoring, as it were, the portion that has been rubbed off the zinc cast.

There is another way of arriving at the same result, and that is by placing the plate in the counter and deepening the depressions and rugæ by means of suitable punches, or the more effective way by padding the model to start with.

The second method is very well adapted for deepening and bringing the rugæ into greater prominence.

After the punch has been used the plate should be cleaned and annealed, and then receive three or four heavy blows in the counter-die interposing as before between the plate and lead, one or two thicknesses of paper.

It may now be tried on the plaster model again, and the fit should be demonstrated by its going into its place without the slightest pressure, by its steadiness and freedom from rocking or tilting, also by its perfect adaptation to all parts of the gum and alveolar ridge.

Practically we have now finished with the zinc model, which should be put on one side and not referred to again. The plate fits the plaster model, and should maintain that fit until it is ready for the mouth.

After the plate has been cleaned, it should be cut away for the clasps, filing it down to the gum, but not away from the necks of the teeth where they are very long; but where they are of medium length it should be filed away to just admit of the thickness of gold composing the clasps, between the neck of tooth and edge of plate. In the former case the clasps will rest on the plate, and in the latter on the gum.

This trimming of the plate requires considerable care, so as

not to file away too much, it should be bevelled to the necks of the tooth, or teeth and not filed straight down, the corresponding edge of the clasp being bevelled to conform to it; by this means we are not so likely to cut away more than we want.

When there is a large space between the plate and the clasps, it is much more troublesome to solder, and the resulting joint is not neat.

On no account, must shears be used for cutting, or trimming the plate after the last swaging. All surplus material must be removed either by the nippers or file to avoid bending the plate.

(To be continued.)

SEPARATION OF TEETH.

By T. F. CHUPEIN.

Rubber for separating the teeth is little used on account of its great activity and of its disposition to work its way toward the neck of the tooth, thereby pressing on the gum and causing considerable pain. Yet rubber is made in special forms and used for this purpose still. This style of rubber often gets quite stiff, hard and rotten, making it, when wanted, unfit for use. Rubber-dam is always at hand, is always fresh and always ready for use. If a piece of this be *twisted in a roll between the thumb and fingers* it can be made in any size necessary for the case in hand, and being thus made cylindrical, is in the best form for application. Three, four, five or a dozen turns can be made of a small discarded piece of an inch square to place between the teeth to effect their separation.

British Journal of Dental Science.

LONDON, JANUARY 15, 1896.

THE COMPANIES' ACTS.

THE difficulty of legislating for the benefit of the Public at large, without at the same time providing opportunities for unscrupulous people, has been well illustrated by the Companies' Act of 1862. It was originally intended to encourage trade by allowing a comparatively small number of persons (not less than seven) to carry on business with a limited joint stock or capital, and without the risk of liability beyond the loss of the joint capital. No doubt it has resulted in a large amount of foreign capital and business being brought to our Country, in consequence of the ease with which a commercial Company could be started. The capital in English companies is 315 millions more than that invested in French and German companies put together, and therefore any attempt to interfere with the present arrangements must have due consideration, and be carried out with care.

And yet it seems really necessary that some change should be made, for certain people have from time to time made use of the existing laws in a way not contemplated by the Legislature when the Act was passed. A person who is prevented by law from doing a certain thing as an individual, seems to be able, by calling half a dozen of his friends and neighbours to his assistance, to form a Company and make everything comfortable. And in the event of the promoter having anything to sell he may dispose of it to the Company, and future creditors are left to sue the Company for what it is worth whilst the promoter is safe. So far as this latter arrangement is concerned, however, a

decision of Mr. Justice Vaughan Williams (confirmed on appeal) has probably discouraged Company formation of this sort. But the former state of things remains yet to be dealt with, and it is to be hoped that in the reform which it is believed will be brought forward by the Government in the next Parliamentary Session, some provision may be made to prevent the formation of "one-man Companies" not only for the protection of creditors but for the prevention of illegal practice in the Medical and Dental Professions.

Last year a report was issued by a Departmental Committee appointed by the Board of Trade to consider the amendment of the Companies' Acts, and if the Clause which they have recommended should become law, it will go far towards preventing the anomaly to which we have referred. The Committee had their attention called to certain cases by Medical Associations and the Pharmaceutical Society, and they suggest that a Company may be "wound up" (not to keep it going, but in a financial sense) if the Court is satisfied that the Company was formed, or that its business has been carried on for any fraudulent or illegal purpose. They propose also that in such cases the Attorney General shall have power to petition. We imagine, therefore, that under the above clause it would become impossible for an unregistered man to promote a Company by obtaining the signatures of his wife, cousins and aunts, and then to carry on a practice in defiance of the Medical or the Dentists' Act; or if such an attempt were made, a petition for the "winding up" of the Company ought certainly to succeed. Our hopes and views may appear too optimistic; the suggested amendment has yet to become law, and even then a favourable interpretation obtained, but so long as the Public is supposed to be protected from illegal practice carried on for gain, it seems only reasonable to expect that when Parliament is shown the disease it will not refrain from applying the remedy.

EXAMINATIONS FOR THE DIPLOMA.—As reported in our last issue, the Board of Examiners in Dental Surgery at the English College think the time has arrived when the examination for the Licence should be divided into two parts, and should include chemistry, physics and metallurgy. At Edinburgh, Glasgow, and Dublin, the Candidates for some time past have had two examinations, with certain exceptions in the case of the last-named College where we believe registered men can still find a footing without a curriculum. The methods of Examination differ, however, at the various Colleges. In Scotland the papers come first, and if a Candidate fails at this portion he is told so, and does not proceed further. In England we believe it is not an unknown occurrence (though doubtless a rare one) for a Candidate to fail on his papers, and yet to be submitted to the practical and oral portions without a chance of passing. In Ireland, we have heard that the practical is taken first and that a Candidate has been referred without being required to present himself for the written portion.

THE TONSILS AND APROSEXIA.—Mr. Downie in a paper read before the Medico-Chirurgical Society of Glasgow, alludes to the impairment of the cerebral function due to disorders of the nose and naso-pharynx. Guye, of Amsterdam, first described the condition which he styled "Aprosexia," and he attributed it to pressure being exerted on the lymphatics preventing the current of the cerebral lymph and causing retention of the products of the chemical processes in the tissues of the brain. Mr. Downie alludes to the vacant expression of those suffering from post-nasal growths, who are of necessity "mouth-breathers," and he says that in addition to the look of stupidity the children are usually stupid and backward in everything calling for mental effort, and aprosexia is a marked feature in most cases. In Guye's first case a boy with complete nasal obstruction had been to school for a year and only learned the first three letters. After the removal of a mass of adenoid

tumours from the naso-pharynx he learned the whole alphabet in a week.

SALT FOR TOOTHACHE.—It is surprising that medical men should not take a little trouble and inform themselves as to the different pathological conditions which give rise to the varieties of "toothache." Like the general public they are not inclined to differentiate a variety but simply recognise the general term. For instance, one practitioner having written to a medical paper to recommend the insufflation of common salt to relieve the pain, another follows with his explanation as to the *rationale* of the process. He thinks it to be one of those effects of thinning or defibrinating stagnant blood which salt shows as well as salicylate of soda, antipyrin, potassium iodide, etc. Given to a blood-giver in a case of transfusion, these drugs all prevent clotting in the canula; and there is no pain without congestion and consequent *stasis* of blood, as in furunculus, toothache, tic or inflammation anywhere. Whatever may be the effect of chloride of sodium applied to an exposed pulp, we are rather sceptical as to the salt reaching an inflamed periodontal membrane unless applied as a root dressing through the apical foramen!

INTESTINAL NEUROSES.—In the course of an article in the *British Medical Journal* upon abdominal section, Mr. Frederick Treves mentions an interesting case as illustrative of the nervous origin of the symptoms in certain instances. A young woman was admitted into the London Hospital with the assurance that she had swallowed a small artificial denture. She was in very great distress, complained of severe and well-localised pain in the stomach, and was very constantly sick. Palliative treatment was tried without effect; the patient became worse and some five days later was considered to be in a critical condition. The abdome

was opened and all parts of the stomach were palpated without anything abnormal being discovered. The wound was closed, the patient was relieved of her symptoms and—two days later the missing denture was discovered in a drawer in the patient's room! She had apparently forgotten that she had removed it, and on waking in the morning at once persuaded herself that she had swallowed her artificial teeth whilst asleep.

DEATH UNDER NITROUS OXIDE.—Two deaths under anæsthesia have recently occurred in Guy's Hospital. The first was a case in which chloroform was administered, the patient suffering from enlarged tonsils and cervical glands. Two minutes after the commencement of the operation the respiration ceased, but was artificially maintained, and the patient rallied. After the operation had been resumed, respiration again failed and all restorative measures were futile. The second case, on Dec. 2nd, was perhaps more important from our point of view. It had been decided to rely upon ether, but, as is so frequently and wisely done, Nitrous Oxide was administered first. We are told that just when the gas was being changed for ether the heart's action failed. The *Lancet's* information was based upon insufficient details, but probably the latter case at all events may be discussed at a meeting of the Society of Anæsthetists. In consequence of the Dental School, Guy's is rather strong in Anæsthetists; in the above cases two House-Surgeons were the administrators.

CHILDREN'S FOOD.—Dr. Allen does not approve of giving little children coarse, hard food to masticate. The temporary teeth are not suited to that purpose from their brief duration, during the early part of which the roots are undeveloped, and the teeth not firmly fixed in the alveolus, while during the latter portion of their retention the roots are being absorbed, the edges having sharp, jagged points not fitted to bear the pressure of excessive mastication. The effort being painful, the child swallows its food as best it can, and the foundation for dyspepsia is early laid.

Abstracts of British & Foreign Journals.

DENTAL EDUCATION IN HOLLAND.

By E. STARK, Nieuwer Amstel.

The following is an abstract of an Address delivered by the Vice-President of the Holland Dental Society, and is of interest in suggesting the formation of a College of Dentists analogous to the one formerly in existence here:—

He who now wishes to study Dentistry must pass the final examination of our Higher Burgher-School (a five years' course) where he is instructed in twenty branches of study. Even supposing a man takes an interest in twenty subjects, is it probable that his interest will be in those special twenty subjects decreed by the "Higher Burgher-School Bill," but for all that he who wishes to become a dentist must pass this final examination. By this law he is forced for about a third of his lifetime to study branches in which he does not take any interest, and the consequence is he is not "educated" but "trained."

In this way we may get men who hold a diploma, who are fitted for that profession where general knowledge is a merit. Now in Dentistry general knowledge is a mark of incapacity; therefore it is a very great pity, not only for the public, but also for the dentist, that he has to pass that examination.

It is a pity that this excellent education cannot be given in a better manner and having regard to the future career of the different pupils. Why not in the first three courses teach the same subjects to all the pupils, for often until then they do not know which career to follow; why not divide the fourth and fifth course into groups, and after attending one of these the pupil could pass his final examination. It would be better that these courses should be evening classes so that the pupil should have the day-time for his practice.

The student who has now passed the final examination can go and study for the first examination (theoretical only) in dentistry. Up to this time he has been overwhelmed with lessons, now he does not know where to go to study the different subjects unless some one who has passed all (or two) of his examinations in medicine will teach him. He can go and follow the courses of general pathology and physiology but in taking courses of anatomy and special pathology

he would waste too much time, time of which he could make better use.

The professors who examine in the subjects of this theoretical examination have always been good enough to acknowledge the want of this opportunity and, in questioning, they have always remembered this. Now this has not always been an advantage for many of the candidates, knowing the consideration of the professors, have passed this examination and afterwards at the second, the practical, examination have discovered that their knowledge of the theoretical subjects was not sufficient. In preparing himself for the final examination of the Higher Burgher-School the candidate has to work very hard; in preparing for the theoretical examination he can find much time for learning the practical part of dentistry, how to make use of his hands.

Supposing there should be no modification in the existing arrangements, then I should like to answer the question, "What should be done to educate the Dentist in Holland." I am not anxious to see either the State or the County Council, or the Local Government Board providing this education. I think it much better for the dentist to follow the ideas lately mentioned in our Society, and I should like to see experts co-operate in founding a school in Holland where he who has passed the final examination of the Higher Burgher-School could receive his whole education in Dentistry.

There could be two or three doctors for teaching anatomy, physiology, and pathology, three dentists for teaching dental surgery and dental mechanics, and an apothecary for teaching materia medica. The interest in dentistry in Holland is great enough for us to know for certain that the expenses of the school would be met by the fees. If it is possible for these ideas to be carried out, then in the first place we must devote full attention to the manual training which has been too long neglected, and our teacher in dental mechanics would find much to do. The candidate could be taught the subjects of the theoretical examination after which, being well up in dental mechanics he could become a dental assistant. By taking such a position, young men who are not well off could then earn something for their further study and in this way not only the sons of well-to-do people but also the most capable men could become dentists, and would not this be an advantage to the public? The school would

not only be profitable to the men who study dentistry but by its influence many of the cheap, advertising practices would disappear, where now people who cannot pay the ordinary fees are not always treated with a due regard to their interests. Further the candidates who now reside in different parts of the kingdom will centralize themselves and will then perceive the good of such organisation.

THE OPERATIVE TREATMENT OF CLEFT PALATE.

By EDMUND OWEN, F.R.C.S. Eng.

The five cases which form the basis of this paper happened to come under notice in my private work during the months of May, June, and July last. In most of them the cleft traversed the hard as well as the soft palate, and they were all dealt with on very much the same plan. In each case Mr. Henry Davis gave chloroform as the anæsthetic, partly by a flannel mask and partly by a Junker apparatus, and Mr. Kellock kindly helped me with the operation. Smith's gag was used, and the child's head was allowed to hang well back over the end of the table so that the blood might make its escape by the nostrils instead of entering the pharynx or larynx. All the children were operated on at the St. Helena Home, next door to Lord's cricket ground, which has the great advantage of being surrounded by a large garden which in some respects answers Bacon's demands as to what a garden should be. He says : " For the side grounds you are to fill them with variety of alleys, private, to give a full shade ; some of them wherever the sun be. You are to frame some of them likewise for shelter, that, when the wind blows sharp, you may walk as in a gallery." And, surely, in such an environment as this, primary union is more likely to be obtained than when a child after the operation is shut up in a close ward or a stuffy house. I got the children out into this garden, if possible, on the day after the operation, and they amused themselves on the grass quietly and safely the live-long day. Such an arrangement could be carried out only in

the spring and summer, and my experience is that this is by far the best time for operating. East winds, fogs, catarrhs, coughs and colds have then passed away, and, moreover, a good natural light can almost be depended upon for the operation.

When the question of operating upon a cleft palate is being considered, due regard should be paid to the aspect of the child, and careful inquiry should be made as regards the general state of health. The same precautions are, of course, advisable in the case of every operation in which, urgency being out of the question, the surgeon can choose his own time and place. But in the case of operations for cleft palate there is this difference, that if primary union is not secured complete failure is likely to result. If the edges of the palatine cleft do not adhere from the first, the child's tongue and his food find their way between them, and inflammation, ulceration, and suppuration ensue; the stitches cut their way out or adhere uselessly to one side, and the child's mouth is probably left in a worse state than it was before, because the borders of the cleft are henceforward to be represented by firm and unpromising scar tissue. Failure to secure primary union after this operation is far more serious than it is, for example, in the case of the radical treatment of hernia or in the case of a harelip. In the former instance suppuration, though greatly to be regretted, does, as a rule, little more than delay the healing of the wound; and in the case of the harelip, as soon as the inflammatory swelling has subsided, the granulating margins of the labial flaps can be brought together and a secondary union promoted which, in all probability, effects in due course a most excellent result. For a cleft palate operation, then, the child must be in the very pink of condition, and the surroundings should be such that nothing is likely to disturb him. With the object of getting the child to adapt himself to the environment, it is well to have him placed in the charge and under the authority of the trained nurses for a few days before being operated on. Some children learn their first lessons in obedience in these circumstances.

We do not yet understand how it is that there should be an element of uncertainty in the results of operations for cleft palate. I suppose that my experience is not peculiar in this, that on completing a long, difficult, and unpromising operation, when I have remarked that I must not be too hopeful as to the result, the issue has been perfect; and, on the

other hand, when I have prophesied a success for an unusually easy case, Nemesis, the daughter of Nox, has apparently overheard, and has condignly punished me. As to what may be the exact source of the micro-organisms which every now and then undergo successful incubation in the area of the operation, and thereby spoil the surgeon's work, I can say nothing definitely—I suppose that they are staphylococci and streptococci. The operator, however, should take care that he does not introduce any of them with his instruments or sutures, and with this object in view he must have all his material boiled just before using it. And although the delicate mucous membrane of the mouth does not allow of his using the customary carbolic lotion, yet at least he can take care to have the child's mouth and his own fingers as aseptic as he can possibly get them. As regards the child's mouth, there is much that he can do. Enlarged tonsils and adenoids should be got rid of some weeks beforehand, and carious teeth extracted or efficiently dealt with in other ways. And if just before the day has arrived the tongue be found coated or the breath foul, or if the child be vomiting, purged, or coughing, or the temperature be raised, the operation must be postponed.

It has been remarked that, as regards the healing of wounds, the mouth may be allowed to take care of itself; and, for the most part, this is true. Taking into account the work of the dental surgeon, there is no region of the body in which so many wounds are daily inflicted as the mouth; and, with all this, how rarely does one hear of either constitutional or local trouble being caused by wounds in the mouth. They all heal quietly, though, for the most part, by granulation; but something better than this is needed after operating on a cleft palate. Not only must the child and the child's mouth be wholesome before the operation is undertaken, but the surroundings must also be favourable. Mischief-seeking germs want no better nidus than that afforded by the mucoperiosteal flaps which have necessarily been injured by the operation on the palate. There they find moisture, warmth, and oxygen. No incubator could afford them a more generous or favourable treatment. If there happen to be such germs floating in the air the wound is more than likely to attract them, and when once there they cannot be dislodged or even controlled. It is well, therefore, as I have already insisted, that the operation should be done in an atmosphere which is as free, fresh, and favouring as possible. I am anxious to hear the opinions of other surgeons in this matter, but my

own experience is that cleft palate operations turn out much better in private practice than in hospitals. In hospital work some cases do perfectly well, and then come a series of disappointments, partial or complete. Yet, so far as the surgeon could tell, the one set of cases resembled the others as nearly as, in clinical work, balance and average are obtainable. I think it is a good plan for the surgeon to keep out of sight upon the day of the operation, so that when he subsequently appears upon the scene he may be regarded as a kind and sympathetic friend. In this way he gains the child's confidence and the privilege of looking at the child's palate whenever he wishes. Not that inspection can do any good. Though, on the other hand, if the child does not object, it can do no harm. As regards the operation in these children, it was begun by paring a slender strip of mucous membrane from each side of the gap from the tip of the uvula to the very front of the cleft. A free incision was then made along the alveolar aspect of the palate, close against the inner borders of the teeth, and the strips of muco-periosteum which were included between these alveolar incisions and the borders of the cleft were carefully detached by raspatories from beneath the palatine arch and shifted inwards to the middle line. The tension was then relieved by severing the aponeurotic attachment of the soft palate to the posterior border of the hard palate and by extending the alveolar incision backwards as far as seemed necessary through the entire thickness of the soft palate. By this last means the elevators and tensors of the palate and the palato-pharyngei were entirely deprived of injurious influence upon the line of suturing. Though the chief cause of failure of union after operation is probably the incubation of septic micro-organisms, still the risks of the line of suture giving way on account of the child vomiting, crying, or coughing must be reckoned with. Nevertheless, I have seen so many cases in which one or more of these direct causes of danger have been present in a marked degree and yet have done no harm, that I am not much alarmed at their occurrence. If the sutures are soundly inserted they ought to hold. That woman would hardly be worthy of the name of "nurse" who allowed the child after operation to stick his finger into the mouth with the hope of clearing away some unknown source of irritation or annoyance. But no one can prevent the child sucking at the wound or even thrusting the tip of the tongue into the line of sutures. I have, however, adopted a little plan which I think effectually prevents the

latter element of danger. It consists in using silver wire sutures somewhat liberally and, after twisting them up, cutting them so that about one-eighth of an inch of each suture bristles downwards along the middle line like the barbs on the wire in a cattle fence.

The less the child is disturbed after the operation the better. It is inadvisable to distress or frighten him by giving him food through the nares by a soft tube. If he continues to vomit from the effects of the chloroform the introduction of food into the stomach will certainly be harmful. The best thing is to darken the room and let the child sleep off the effects of the operation. If he makes signs that he wants something to drink a teaspoonful or two of water may be given. Probably in this way twenty-four hours may be passed over. After this small quantities of beef-jelly may be given in a tea-spoon. The jelly slips down easily and is a clean sort of food. It is far preferable to milk; it does not form curds in the stomach, as milk does, and it is, I think, more easily absorbed. If, when the feeding is begun, the child will allow the nurse gently to spray or syringe out the mouth into a basin, so much the better. But it is a mistake to attempt such irrigation if it frightens the child. As regards the fluid for irrigation, sanitas and water or a very mild solution of carbolic acid or of Condyl's fluid does well. In the course of a day or two a little sweetened orange-juice, chicken or meat which has been run through a fine sieve, bread and milk, or a soft custard pudding may be given.

After operating on a child I never trouble to remove the sutures, unless when the wound is healed they are still scratching the tongue. The sutures do no harm and they may be safely left to find their own way out.

Case 5.—This, the last of the series, was an infant aged eight months, who was sent to me by Mr. Parsons of Wimbledon. Her cleft involved the soft palate and the posterior third of the hard palate. I operated on her on July 10th, and she was taken home a fortnight later with perfect union even to the tip of the uvula. This was the youngest age—eight months—at which I have ever operated on a cleft which implicated the hard palate, though I have successfully dealt with clefts of the soft palate at an earlier period.

It will be, I think, an interesting and instructive element in the discussion if an expression of opinion is obtained as to what is the best time for endeavouring to close a cleft—(a) in the soft palate, and (b) in the soft and the hard palate of

a healthy child. For my own part I am getting earlier and earlier with my operations; and for this advance I am much indebted to an article written by Mr. Clutton. The fourth patient was only just two years old when I operated on her complete cleft. When her father wrote to me a few days before the operation he said: "She is now two years old, and as far as we can judge her speech will be affected by the cleft." He hit the nail upon the head. If the speech is to be improved to the utmost the mouth must be roofed in at the very earliest moment. For a soft palate, the child being in good health, the time for operating is somewhere in the first six months, I think. For a hard and soft palate together, it is, I think, in the second year, but I should not be surprised to hear that it may safely be shifted to a still earlier period. It will be noticed that in none of these cases have I suggested the division of the operation into two stages—one for the hard and the other for the soft palate. I used formerly to practise that method in certain difficult cases, but I have now given it up. It is full of disadvantages, and I do not find that it possesses any merit to counterbalance them.

The Lancet.

QUACKERY DEFINED.

By GEORGE F. SHRAD.

Quackery is medical practice commercialized, and therefore prostituted. It thrives because the victims are in the majority and are easily reached by lying advertisements. "What is the proportion of sensible people in this crowd?" asked a patent medicine man of a physician. "About one in ten," was the answer. "I take the nine and leave the one to you," said the quack. This represents the majority which help to make the quack rich. The nostrums cost almost nothing; but the capital is used in advertising, in making pictures of the idiots and feeble-minded who imagine themselves cured; in placarding fences; in defacing scenery; in publishing manufactured certificates; in ridiculing scientific medicine; in alarming the credulous; in claiming false discoveries; and in vaunting impossible results. But these are the men who make the money. Medicine to them is the

nickel-in-the-slot machine. The diagnosis is ready-made to suit every need, and even otherwise sensible people are being educated into quackery and into the belief that every man can be his own doctor and not have a fool for a patient.

Forum.

LIQUID AIR.

Professor Dewar has exhibited at the Royal Institution the working of a new apparatus for the production of liquid air with a degree of ease not hitherto attainable. Around a cylindrical vacuum-jacketed vessel Professor Dewar closely coils a metallic tube. This is inserted into a second vacuum-jacketed vessel, the result being that the metal tube is protected from external heat by a vacuum both inside and outside the coil. The inner end of the tube has a pinhole orifice which acts as a stopcock, and the outer end is connected to a bottle of condensed air at a pressure of, say 200 atmospheres. On opening the stopcock of the air reservoir, the condensed air passing through the coil to the bottom of the outer vacuum vessel is enormously cooled by expansion on passing the pinhole. It has no mode of escape, save by forcing its way upwards between the metallic coil and the glass walls which surround it outside and in. By its passage the coil is powerfully cooled and the condensed air passing through it reaches the nozzle at a lower temperature than before. After this process has been carried on for a few minutes liquid air makes its appearance at the nozzle and collects in the outer vacuum vessel, where, in a few minutes more, quantities of 70 or 80 c.c., can be obtained with ease. The process is facilitated by cooling the condensed air on its way to the coil, as by passing the tube through solid carbonic acid. With this refinement liquid air appears in three or four minutes, and collects with great rapidity. The new apparatus does not appreciably reduce the heavy expense incident to experiments at low temperatures.

Reports of Societies.

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

A meeting of this society was held on Friday, Dec. 6th at 8 o'clock. The President, Alfred Smith Esq., was in the Chair. The Minutes of the November Meeting were read and confirmed and the usual welcome was given to visitors.

Upon Casual Communications being called for, Mr. Moore said that in the unavoidable absence of Mr. Spokes, he had been asked to show a patient for whom Mr. Christopher Heath had removed both upper jaws.

Mr. P. R. WALLIS, of University College Hospital, then read the notes of the case, and showed a photograph of the patient before operation. He also exhibited the parts removed, the loan of which had been granted from the Museum. The case is published on page 49, with notes by Mr. Moore as to the mechanical treatment adopted.

DISCUSSION.

The PRESIDENT described a case which occurred in his own experience, of a boy who had lost the greater part of his maxilla; the face was not disfigured, but the nose was of the consistence of a rubber ball, and capable of being pushed well into the face. Advantage was taken of the presence of two bony protuberances at the back of the oral cavity for the attachment of a vulcanite appliance which was further held *in situ* by means of springs. The case was entirely successful for a few years, when the patient died from phthisis induced by inability to breathe through the nose.

Mr. HARRY ROSE said that the case under observation was most interesting, but that the application of a denture presented many difficulties. He had treated a somewhat similar case, involving, however, only one of the maxillæ, and the patient had ultimately died from a recurrence of the disease. Mr. Rose suggested an arrangement outside the head of the patient, after the nature of some forms of interdental splints, in order to keep the appliance stationary in position during mastication.

Mr. WALLIS was of the opinion that the irritation from the rough edge of a vulcanite appliance would probably lead to a recurrence of the growth.

Mr. HARRY ROSE very kindly presented the Society with his work on Dental Mechanics.

The PRESIDENT then called upon Dr. Pare for his address on "Photo-micrography," which is published at p. 63

At the conclusion of the address, a hearty vote of thanks was given to Dr. Pare, and the meeting terminated.

Dental News.

DENTAL HOSPITAL, GLASGOW.

Mr. J. M. McMillan, L.R.C.S., L.R.C.P. Ed., L.D.S., Glasgow, has been appointed lecturer on Dental Surgery and Pathology to the Hospital, in room of Mr. Rees Price, L.D.S. Eng., who has resigned, and Mr. John G. S. Angus, L.D.S. Glas., has been appointed House Surgeon to the Hospital in room of Mr. J. M. McMillan, above-mentioned, who has resigned.

ROYAL COLLEGE OF SURGEONS OF ENGLAND : MEETING OF FELLOWS.

A meeting of Fellows was held on the 2nd inst., when eighty-three Fellows were present, the President, Mr. Christopher Heath, being in the chair. A resolution, moved by Mr. Herbert W. Page and seconded by Mr. Gant, was carried by a large majority, to the effect "that it is desirable to give to the Members of the College direct representation upon the Council." Mr. Clement Lucas moved, and Mr. Norton seconded, a resolution in favour of the admission of women to the diplomas of the College. The resolution was carried, 45 Fellows voting in its favour and 10 voting against.

AN EXPERIMENT IN VULCANISING.

An inquest has been held on Benjamin Joseph Gardiner, a labourer, lately residing at 30, Evesham Road, the Portway, West Ham, who was killed through an explosion of a boiler at the India-Rubber Gutta-Percha Works Company, Limited. Mr. Seal, from the Home Office, represented the Inspector of Factories.

Charles Allen, of 53, Priory Road, Old Charlton, Kent, a fitter, said that on Monday last between three and four o'clock he was endeavouring to get a "string" upon some flowers of sulphur weighing about 1 cwt., which was in a boiler.

By the Coroner : What he was doing was simply a matter of experiment, to find out what amount of heat he could get up to with safety.

A Juror ; Who gave you instructions to try this experiment?

Witness : The foreman, Mr. Cosh. I was taking the temperature of the boilers by means of a gauge in the sulphur, which was quite liquid, when all of a sudden an explosion occurred. I was hurled a distance of about 10ft., and rendered insensible.

William Cosh, of 50, Albert Road, Silvertown, the foreman, stated that flowers of sulphur were being heated in an open-top boiler for the purpose of vulcanizing some rubber. The experiment was to try the effect of vulcanizing over a high heat. The deceased was not wanted, neither did witness consider the other man wanted guarding or protecting.

By the Coroner : The boiler was a cast iron one, and held 20 gallons. It had been tested by steam pressure. It was an old one, and had only been fixed about a week, having been removed from another part of the works.

After further evidence the enquiry was adjourned for further investigation.

VACANCY.

Liverpool Dental Hospital. The post of House Surgeon is vacant. Application to be sent to the Dean on or before Monday, Feb. 10th.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of Dec., 1895.

| | |
|---|------|
| Number of Patients attended | 737 |
| <hr/> | |
| Number of Extractions | 487 |
| Number of Extractions under Anæsthetics | 129 |
| Gold Stoppings | 47 |
| Other Stoppings | 83 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 263 |
| Crowns | 16 |
| Irregularities | 15 |
| <hr/> | |
| Total | 1040 |
| <hr/> | |

J. BUTTERWORTH, J. THEAKSTON, *House Dental Surgeons.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) 14s. od.

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A FEW PRACTICAL POINTS.*

By L. MATHESON, L.D.S. Eng.

My old friend, and our indefatigable secretary (Mr. Clayton Woodhouse), having cajoled me into making a foolish promise, I am here to-night for the fulfilment of that promise. I have, I regret to say, nothing to offer you in the shape of original research, or new methods of practice. All that I have to present for your notice are one or two considerations in respect of some practical details of everyday work. Just as when one or two of us meet for a chat we compare notes as to our experience and discuss our personal preferences for different ways of attaining the same end ; so I have ventured to enumerate a few points concerning instruments and materials, which may possibly be not quite ancient history to all of you, and which, at all events, may, I hope, raise the spirit of discussion.

To begin with, there are one or two forms of probes, which I should like to mention. They are not new shapes, but they are so little used that it seems worth while pointing out their value.

One is a form of instrument that I prefer to any other for the examination and definition of roots more or less hidden, and of the cervical margins of labial cavities extending below the edge of the gum.

* Read before the Odontological Society of Great Britain.

The straight, tapering shank is bent upwards at a very slight angle, for about a quarter of an inch, and then downwards for an inch, at an angle of 45 degrees. This instrument is, I venture to say, much more handy than that ordinarily sold, for the latter is too nearly rectangular, and does not sufficiently clear the anterior teeth in the examination of posterior roots, especially when the teeth stand high, and the roots are low in the gum. This probe is not blunt, but pointed—a very unorthodox shape, I know ; but I must confess that I find the point much more effectual than the dull edge of the usual form.

The usual kind of probe is one that is tapered to a fine point, and is quite straight, except at the extreme tip, which is bent at a right angle to the shaft, for the length of a sixteenth of an inch or less. Similar instruments are a pair of curved probes, of the form commonly used, but having the rectangular tip of the one just mentioned. These three shapes are invaluable for discovering hidden approximal cavities, and for dropping into the marginal flaws of fillings, which produce such different emotions according to whether the filling is of one's own or of somebody else's insertion.

Passing from probes to rubber dam, I would say a word—as I never lose the chance of doing, in season and, I fear, out of season, too—in favour of the use of Fernald's dam holder. The wire frame which goes by this name—or rather, a slight modification of it—I have now used for some years, to the entire exclusion of retractors of any kind ; and nothing would induce me to return to the old-fashioned method, finding, as I do, that the wire frame so very markedly diminishes the discomfort of one's patients when the rubber is used.

The discomfort of one's patients is diminished in three ways. In the first place, the frame, to a large extent, does away with the bridled gagged feeling that the retractor produces. In the second place, the rubber not being drawn

closely against the cheeks, moisture does not pass by capillary attraction on to the skin of the face, and one gets rid of the slimy, messy condition of things so common where retractors are used. In the third place, no band being required round the back of the head, the necessity no longer exists of having to bring into close contact with one person's head the elastic or tape that has been in close contact with other people's heads.

Taken separately, these advantages may look small; but taken together, and in practice, they are far from insignificant; and, indeed, in my opinion, they are so considerable as quite to outweigh the inconveniences one meets with in beginning to use the frame. The chief of these inconveniences, and indeed the only one worth mentioning, is this—that at first the frame seems to get in one's way. One is so used to the rubber being snugly drawn back against the cheeks, that the wire which stands somewhat away from them is rather annoying. But after a very little time and practice, one fails entirely to notice this; and one's only feeling is one of satisfaction at the great comfort afforded to the patient. The slight modification in the frame that I referred to just now as having adopted, simply consists in the use of a lighter wire than that of which the depot frames are made. I use wire about half as thick as that generally employed; I find it quite strong enough, and its lightness is a distinct advantage.

Another matter that I feel strongly upon, and about which I should like to elicit opinion, is the use—or rather, the abuse—of clamps with the rubber dam. In very many cases where clamps are commonly used, ligatures would do as well or better, and at the same time be far less clumsy for the operator, and far less painful to the patient. It is, of course, perfectly true that a well-fitting clamp may, in most cases, be applied with little or no pain; but if it has to remain in place some time, the movement of cheek and tongue, and the

casual touches of mirror or instrument, tend to make the clamp settle down upon the gum in a most painful way. As a matter of practice, it may be maintained that the rubber can be kept in position without clamps on all teeth, except lower molars and second upper molars. Occasionally the first upper molar requires clamping, and very occasionally a bicuspid. By the well-known device of a bead, or a bit of amadou knotted into the silk, a ligature will often effect the same purpose as a clamp, and with very much less distress to the patient.

Into the consideration of the various means of excluding moisture other than the use of the rubber dam, I do not propose to enter, except to mention one method which I value very highly, and which is not, I think, used nearly as much as, with advantage, it might be. I allude to the combined use of clamp, saliva ejector, and paper-fibre lint. For a short operation on lower molars; such as the application of a dressing, or the insertion of an amalgam, or gold-tin filling, time is saved, and the convenience of the operator and the comfort of the patient best consulted by this way of working. The instrument used is the so-called Stokes' clamp, having a tongue-guard and ejector-nozzle attached to it. This effectually checks the moisture on the lingual side, and keeps the tongue out of the way; whilst a properly shaped and properly folded piece of paper-fibre lint commands the flow of saliva from the parotid gland. A convenient piece of lint, in average cases, is in shape about two inches long by one broad, with one corner rounded. The round corner is placed against the lower third molar, and the square top is folded down to the extent of about half-an-inch, so as to ensure a double thickness against Steno's duct. Very neat and very effectual I find this plan to be.

The mention of cases in which the rubber dam may be dispensed with, leads me to speak of tin and gold as a filling

material. Used in the form of tape or loose rope, in the proportion of two sheets of Abbey's non-cohesive gold, No. 4, to one sheet of White's tin, No. 4, this combination is a very valuable one, as I am sure many here present can testify. In many instances it is not merely a good alternative to gold, but it is much superior to the precious metal used alone. In particular, it is most useful in dealing with coronal and labial cavities in second and third molars, especially in small and medium-sized cavities, and in teeth of a low standard of strength. The rapidity with which it can be safely worked makes it extremely useful in cavities far back in the mouth. And the fact that absolute dryness is not essential to its successful working makes it pre-eminently suitable for cases where there is a difficulty in the exclusion of moisture. And further, there seems to be no doubt that tin, and tin and gold together, do exercise a marked preservative action on teeth of loose structure or imperfect calcification.

Used in large cavities much exposed to the wear and tear of mastication, it is a good plan to face the filling with gold alone, leaving a thin marginal line of tin and gold or tin alone. This does away with the objection that in extensive coronal fillings tin and gold presents, in the course of time, an uneven surface.

I have spoken particularly of molar cavities, but in hidden approximal cavities also the combination of the two metals does excellent service; and so much do I value it, that frequently even in incisor cavities I use a thin layer of it on the palato-cervical margins of weak teeth.

Tin and gold works, of course, non-cohesively, and is quite unsuitable for use with the mallet; and this brings me to a part of my paper which must, I doubt not, provoke some antagonism, inasmuch as it deals, briefly though it may be, with the comparative merits of hand pressure and mallet work. I may say at once that, using hand pressure as I do

to the entire exclusion of the mallet, I cannot consider myself an absolutely impartial judge, any more than an operator who makes the mallet a *sine qua non* can be considered an impartial judge. But this much I will venture to say ; that the brilliant attractions of mallet work have tended to throw into the shade the less dazzling qualities of hand-pressure fillings.

That a fine, dense, smooth surface can be more readily obtained ; that more gold can be packed into a given space, and the hardness, compactness, and specific gravity of the filling greatly increased ; and that a good deal of time and strength, on the part of the dentist, may be saved by the use of the mallet, as compared with hand pressure,—all these facts must be admitted. But what I want to point out is this—that a splendid surface does not by any means imply undercuts soundly filled ; that perfect cohesion and high specific gravity are quite compatible with imperfect adaptation to the walls of a cavity ; and that, when time is balanced against comfort, it is not always in favour of time that the scale dips.

It will be urged, quite rightly, that a good operator will take more care over the undercuts than over the surface of his fillings, and that he will pack them perfectly, using if necessary, in deep angular corners and places difficult of access, either a flooring of oxyphosphate, or gold inserted by hand pressure, or both, so producing a plug the solidity of which cannot be questioned. This may be freely granted, and yet it may remain true that it is easier to overlook and leave faulty the proper treatment of undercuts with the mallet than with hand pressure. This is more especially to be noticed in such positions as the overhanging anterior walls of coronal cavities in molars, and those parts of incisor cavities near the cutting edge.

With regard to close adaptation of the gold to the walls, and especially the margins of the cavity treated, it will, I

know, be hotly contended that it is just here that the value of the mallet so conspicuously shows itself. If it does, it is too often at the risk of cracked or bruised enamel; and even waiving this, I cannot help feeling very strongly that there is a serious danger, in the vibratory nature of the mallet's blow, of shaking the filling *en masse*, and so of obtaining a compacted homogeneous nugget of gold, at the expense of that clinging to the walls of the cavity which is so desirable, and which is so characteristic of good hand pressure work. This is a difficult point to prove, and I may possibly be mistaken, but it is the only way in which I can explain some of the failures I have seen in malletted fillings.

As to the important question of time, it is possible, of course, to say that it affects the patient as much as it does the operator—that the former is as glad to get the work done quickly as the latter is. Other things being equal, this may be so; but I maintain that, to the vast majority of patients, the gain in time afforded by the use of the mallet is as nothing compared to the comfort of doing without it. And herein lies my chief indictment against the mallet, namely the distress that its use occasions. Fortunately, one does meet, in practice, with a certain number of people who will bear much discomfort, and even positive pain, with stolid equanimity. But the greater part of human nature is not of this admirable sort, and we have to deal with human nature as we find it; and though many patients can be got to bear much pain by the exercise of sympathetic firmness or stern insistence on our part, the matter resolves itself not so much into the question how much pain we can induce our patients to bear, as how much it is *necessary* for them to bear. If an operator says to me: "I do not deny, as indeed it cannot be denied, that malleting is a very distressing process, but I employ it because I am convinced that without it I should

fail in my duty towards my patient," I reply : " In that case you are bound to use the mallet." On the other hand, I believe that I best serve those who come to me for treatment by avoiding its use. And this, after all, is my main contention—not so much to denounce malleting, as to maintain that good work can be done without the mallet as well as with it. From a purely selfish point of view, I should be very sorry if first-rate mallet work were ever to cease altogether ; it is so very pretty to look at ; but in sober earnest, I assert my conviction that hand pressure, with a due expenditure of time and care, and the use of finely serrated pluggers, may be relied upon, in the long run, to give quite as good results as any other method, and, in some respects, better results.

In weighing results, the all-important matter of durability stands first. Given two teeth of average structure, presenting similar cavities, and with operators of equal ability to fill them—the one using a mallet and the other hand pressure—I think that the latter may be depended on to hold its own ; I go so far as to say it will—in approximal cavities, and especially in teeth of weak structure—more than hold its own. Comparative comfort during the filling process, and the natural satisfaction of the patient thereat, must certainly count among results—not only immediate, but far reaching ; for I have frequently been forced to the conclusion that fear of the " hammer," as patients irreverently call it, frequently adds so much to the dread inspired by dental operations as to prolong disastrously, in many cases, the intervals between the periodical visits that ought to be paid, with the usual deplorable consequences. Again, there is a result, affecting the operator, and indirectly his cases, which calls for a moment's notice ; I mean the fact that the use of the mallet tends—certainly often, if not always—to the frequent use of cohesive gold, even under circumstances where non-cohesive is distinctly called for ; and this, to say the least, is

pity, seeing what great advantages non-cohesive gold possesses in its proper place.

But after all, it remains true, to use the words of a brilliant member of theallet school, that* "The success of an operation depends more on the skill of the operator than on the material used, or the means employed"; and I have said what I have said more to defend the method I adopt, than to attack that used by others.

One more word I may perhaps be allowed to say on this subject, and I would, if I may, address it to those young operators who have only recently come under the fascination of theallet. To them I would say this, that whilst, with all its drawbacks, very beautiful work may be, and is, done with that instrument, and whilst I am not prepared to dissuade them altogether from its use, I would, in addition to what I have already said, add this, that the difficulties of doing first-rate work with it are far greater than to the beginner they appear to be. It is so easy to make a filling perfect in appearance—so difficult to make a filling perfect in reality. A dense central mass, a splendid surface may be obtained by anyone; but to build solidly against the walls and into the out-of-the-way corners of the cavity, and to obtain perfect margins without damaging enamel edges, requires the utmost care and circumspection, and the greatest watchfulness in testing at every step each layer of gold inserted. Whatever else may be said in favour of theallet, it cannot be said that the operator can *feel his way* so well with it as with the hand plugger; at least, not at first, nor for many a long day.

And here I would venture to make an earnest appeal to those just entering upon dental practice, and to those whose business it is to teach our students,—not to make time a

* Marshall Webb's "Operative Dentistry," p. 92.

matter of the first importance. Three things there are which go to make an ideal operator—thoroughness, gentleness, quickness—and surely one should cultivate these qualities in the order named. If gentleness of touch and manner is put first, then thoroughness must suffer ; if rapidity is put first, then one may say good-bye both to thorough work and to considerate work.

It always makes me shudder when in my hospital rounds I hear a student boast of rapid work, or even ask how rapidly such and such an operation can be performed. Such a question asked of me receives the invariable answer, “Just so long as to ensure, in the first place absolutely sound work, and in the second place due consideration for your patient’s comfort. Given sound work, given due consideration for the patient, you may then think of the pace, but not till then.”

From the vexed question that I have ventured to touch upon, let me turn for a few moments to the question of contour filling. I am inclined to think that in this matter I shall find myself happily in agreement with most, if not all, of those who are so kindly listening to me, when I say that the longer I practise the more value do I set upon contour filling, as a means of preserving the teeth from caries : that is to say, when the filling can be so shaped as to knuckle quite closely to the neighbouring tooth or filling, so closely, that is, as to prevent the passage of food towards the interstitial gum. If this close approximation to the adjoining tooth cannot be obtained, it is almost needless to say that the contouring of the filling becomes not only useless, but generally worse than useless, inasmuch as it rather favours than prevents the lodgment of food at the gum margin. And whilst *such* contour fillings are to be deprecated, so to, in my opinion, are those extensive edifices which, having no preservative influence, are built up solely to restore the original outline of the tooth under treatment. They are, to my mind, uncalled

for, alike from a surgical, an artistic, and a useful point of view. Likewise uncalled for, I think, and undesirable from the standpoint of our patient's best welfare, are huge gold contour fillings in molars. Where filling is admissible, a carefully inserted and carefully finished amalgam serves the required purpose best in the great majority of cases; and where there is very extensive disease, both mesial and distal, gold collar crowns, duly and properly adapted, afford the most satisfactory means of restoration. In the insertion of large contour amalgams I have lately found great assistance in the use of the new screws just introduced; their application is very simple and easy, and they form a valuable addition to the ordinary Howe screw post, which is so convenient in the case of dead teeth.

Before I leave the subject of fillings proper, I should just like to urge any who have not yet tried the Maxfield disc-holder to do so without delay. It is simplicity itself, it never fails to hold the disc securely, and it never seems to wear out.

The contouring of fillings as a safeguard against decay leads one naturally to that other, and diametrically opposite, means of attaining the same end—I mean the isolation of approximal surfaces by the extraction of teeth. To some this is anathema maranatha, and we occasionally hear solemnly preached the sin of breaking the dental arch, or of interfering with articulation, and so with the functional activity of the teeth. Granted that it is an axiom of good dentistry not to extract a single tooth if by any means it can be advantageously saved, and admitting to the full that to interfere with normal articulation is not permissible except for very good cause shown; it is, I think, abundantly proved by experience that in nine cases out of ten, young mouths are vastly improved and benefited by the extraction of one tooth out of every eight, and that even in those few cases in which the

articulation is somewhat disarranged by such extraction, the mal-occlusion is a lesser evil than that resulting from the retention of the full thirty-two teeth. In other words, very good cause can be shown in nine cases out of ten for risking any harm that may result to the articulation from the removal of four molars or bicuspid ; and a tooth, however slightly decayed, or even if sound, is *not* advantageously saved, if its retention shortens the life and subsequent usefulness of the adjoining teeth. Primarily, of course, the object of a bilateral extraction in both upper and lower jaw is to relieve more or less irregularity of position due to overcrowding, but in mouths where the teeth are of weak structure, and much decay, or the threatening of it, are already apparent by the twelfth year, it is quite unnecessary to wait for marked overcrowding as a reason for the use of the forceps. In fact, it is just in these cases—of weak teeth without any marked crowding—that the advantages of extraction are most conspicuous, so far at least as its effects on decay are concerned. For where there is no great pressure, the spaces left by the extractions do not so rapidly fill up, and the teeth anterior to the spaces, especially the bicuspid, tend to become spaced themselves. And it is these spaces, that in the case of teeth very prone to decay, are so important and useful, especially if, when they are not quite wide enough to prevent the accumulation of food, they are judiciously shaped by corundum discs.

One point with regard to overcrowding I should like to emphasise, as it is apt not infrequently to be lost sight of. Cases present themselves of patients whose age may be anything between thirteen and eighteen, or even more, and whose teeth are closely set, with, perhaps, a very slight tendency in the canines or laterals to overlap adjoining teeth, but without any noticeable appearance of overcrowding, or consequent irregularity. This is prior to the eruption of the third

molars. Directly these teeth begin to show themselves a marked change takes place in the arch; the canines, or laterals, or both, being forced out of place, so as to badly overlap their neighbours. Then it is one wishes that timely extraction had been performed at an earlier age, so as to prevent the tremendous forward pressure exerted by the third molars from affecting the front teeth.

I mentioned just now the valuable services rendered by collar crowns. I will, with your permission, occupy a few more minutes in drawing your attention to two modifications of the usual form of these crowns, both of which, I think, fill a niche of their own. The first of these was introduced by Mr. Whittaker, of Manchester, and consists of a form of crown especially adapted for laterals and centrals. In trimming the root, Mr. Whittaker leaves intact the palatal enamel, which, in most cases, projects considerably beyond the neck, where cementum and enamel meet. This retention of the palatal enamel necessitates such a special contouring of the palatal portion of the collar as that its gingival margin shall fit the neck of the tooth accurately, while the other margin shall give room for the projecting enamel; in other words, the gingival margin has to be less in circumference than the other. Consequently, the collar, when fitted, can only be got into place by carrying up the palatal portion first, and then springing the labial portion over the labial margin of the root. It is claimed that this shape of collar adds greatly to the stability of the crown, inasmuch as it enables the latter absolutely to resist the great forward pressure sometimes exerted by the bite. The method of springing the collar into place precludes the use of a pin in the pulp canal; and, indeed, it is urged that this is an advantage, as the pin becomes quite unnecessary. This form of crown I have used in one or two instances lately with much satisfaction. Particularly in one case of a broken-down central, with

a living, healthy pulp, did I, two days ago, find this method admirably applicable, as I was enabled to fix the crown securely without opening the pulp-chamber.

The second modification is one that I have twice found of great service. One illustrative case I will briefly describe. The root of a second upper bicuspid which it was important to crown, presented this difficulty—that its palatal margin was so much diseased as to make a firm hold for the usual collar not available. I prepared a collar in the usual way, getting as good a hold on the sound part of the root as possible. Then I inserted a Howe screw post in the palatal canal. A diaphragm was soldered about half way up the collar, and a hole made in the diaphragm for the post to pass through; then the labial cusp was made solid and true to the bite. Thus I had what is roughly indicated on the blackboard at A; a collar with a diaphragm; a solid labial cusp; and in place of a palatal cusp an open chamber. The letter W indicates in section a wire that was soldered to the outer edge of the chamber in order to make it rounded and solid. The under surface of the diaphragm being charged with oxy-phosphate of zinc, the crown was carried home, a washer was placed over the post in the chamber, and a nut screwed down upon that, so making all secure. The chamber was filled up with phosphate, the surface of which, at an early day, is to be replaced by gold. The use of the wire round the margin of the cavity thus to be filled with gold will make a much better finish than one can get with the mere thickness of No. 4 plate as a cavity wall.

Gentlemen, I beg to thank you for the patient hearing you have given me, and I only wish that what I have ventured to lay before you were more worthy of the kind consideration you have shown.

ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(*Continued from page 62.*)

Treatment of Tumours of the Maxilla.

The treatment of tumours of the Gum and Palate, of Cystic and Polypoid disease of the Antrum and of the various forms of odontome affecting the maxilla has already been discussed. Innocent tumours such as fibromata, enchondromata, and osteomata may when small, be removed *from* the maxilla; when growing from the surface they may be cut off together with the piece of bone to which they are actually attached, or when growing from the antrum they may enucleated after opening that cavity freely. Large innocent tumours require removal *with* the whole or a large portion of the maxilla.

Malignant tumours nearly always necessitate removal of the entire maxilla, although occasionally the disease is sufficiently limited to enable the surgeon to spare the malar bone or the orbital plate. Thorough and complete removal of the tumour is necessary; no partial or piecemeal operation is permissible.

Before attempting removal of the maxilla the surgeon should satisfy himself as far as possible as to the diagnostic points mentioned on page 61. He must also determine whether the growth he has to deal with is one that can be removed with a fair prospect of success. No definite rules can be formulated, each case requiring separate consideration on its own merits. When the tumour is of many months duration, hard, well defined, limited to the maxilla, and the skin over it

freely movable even though thinned from pressure or altered in colour, it may be regarded as one favourable for removal. If on the other hand the growth of the tumour has been rapid, its consistency soft and ill defined, its vascularity great, the skin over it involved and fixed, the orbit, nose, naso-pharynx or temporal region invaded, the submaxillary and cervical glands enlarged, the patient old, weak, or emaciated, the case must be considered unsuited for operative interference.

COMPLETE EXTIRPATION OF THE MAXILLA.

Before the operation the face must be shaved and the mouth rendered as aseptic as possible. If time permits, carious teeth should be attended to and those covered with tartar carefully scaled; the mouth should be frequently rinse with an antiseptic mouth wash and mopped out with a 1-in-4000 solution of biniodide of mercury immediately before the operation. If the patient is old or feeble it is advisable to administer an enema of hot brandy and water.

The administration of chloroform (the only suitable anæsthetic for the operation) must be entrusted to an assistant who is thoroughly reliable and accustomed to operations involving the mouth.

When the patient is under the influence of the anæsthetic the surgeon makes a complete examination of the growth to ascertain its extent and attachment and to decide whether, owing to its vascularity, it is desirable to perform a preliminary laryngotomy and plug the pharynx.

An incision is then made through the centre of the upper lip, round the ala and along the side of the nose as far as the inner canthus of the eye, and then outwards as far as the malar prominence. (Fig. 36.) This incision has the advantage of dividing the branches of the facial nerve and artery near their terminations, and of leaving a much less conspicuous scar than other incisions which have been

recommended. The flap thus marked out is rapidly reflected and the hæmorrhage, which is often very free, arrested with pressure forceps.

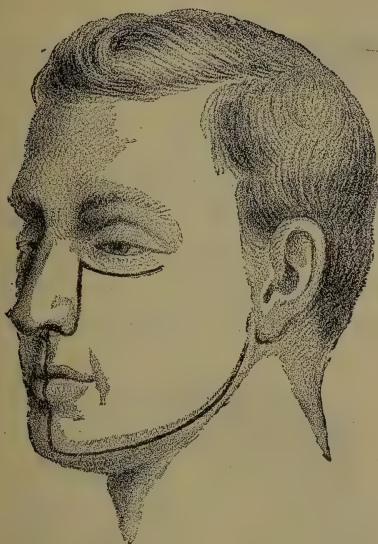


Fig. 36.—Showing the incisions for removal of the maxilla and mandible. (*Heath.*)

The ala of the nose is then detached from the bony margin and the periosteum raised from the floor of the orbit.

With a saw, such as that shown in fig. 37, a deep groove



Fig. 37.—Fergusson's Saw.

is cut in front of the attachment of the masseter muscle partially severing the maxilla from the malar bone; the saw-cut should come opposite the speno-maxillary fissure.

The nasal process of the maxilla is then partially divided

in the same way. The central incisor on the diseased side is next extracted and a narrow-bladed saw, (Fig. 38) inserted

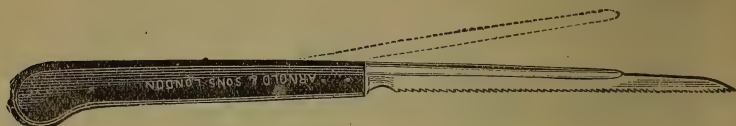


Fig. 38—Narrow-bladed saw with movable back for dividing palate.

into the nostril; the hard palate is sawn nearly through, care being taken not to damage the soft palate. The mouth is then opened widely with a gag and the soft palate detached from the margin of the hard with a scalpel, so that when the maxilla is removed the soft palate remains behind. The

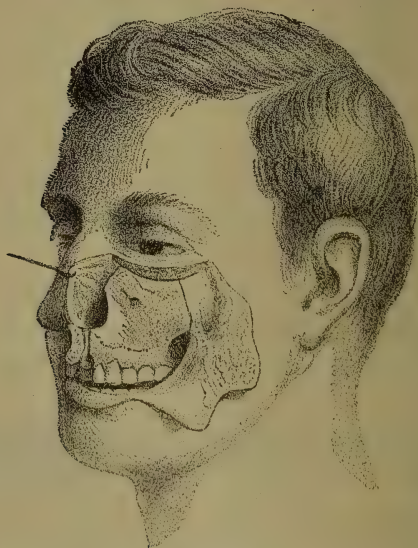


Fig. 39.—Excision of Maxilla, Cheek flaps reflected and the saw-cuts made. (*Heath*).

maxilla is now completely severed from its bony attachments by means of strong cutting bone forceps introduced into the saw cuts previously made. (Figs. 39 and 40).

The loosened bone is next seized with powerful lion forceps (Fig. 41) and twisted from side to side whilst its remaining

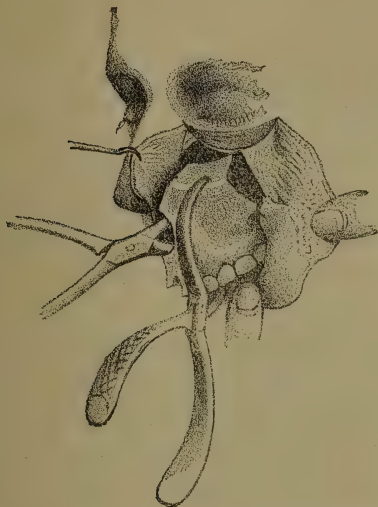


Fig. 40.—Excision of Maxilla. The saw cuts completed by cutting bone-forceps. The Maxilla seized with lion forceps. (*Heath*).

attachments to soft parts are torn through with the finger or severed with a knife. The bleeding at this stage is seldom serious as the branches of the internal maxillary artery are small where they enter the maxilla and have been mostly torn

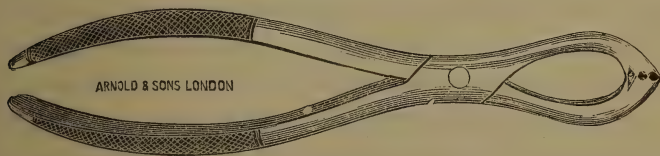


Fig. 41.

across rather than cleanly cut ; it can usually be arrested by sponge pressure, but any vessel which can be seen bleeding should be tied. The spheno-maxillary fossa and the cavity of the nose are then examined and any further portions of

growth left behind are removed by knife, scissors, or sharp spoon. If the surgeon has any doubt as to the complete removal of the disease, Chloride of Zinc paste should be applied to the suspicious places on the end of a strip of lint and covered with a pledget of wool dusted with iodoform to prevent the escape of the drug into the mouth. If the growth has been completely and satisfactorily removed the wound should not be packed but should be painted over with a solution of iodoform in ether; but if there is any oozing going on after all visible bleeding vessels have been secured the wound should be plugged with strips of iodoform gauze.

The flap having been brought into position is fixed by a number of interrupted sutures of fishing gut, taking particular care to adjust the red margin of the lip very accurately; hare-lip pins may be used if necessary, but are better dispensed with. The wound is dusted over with iodoform and covered with a gauze dressing.

When the patient has recovered from the anæsthetic, he should be well propped up in bed to facilitate the escape of discharges. Any plugs that may have been inserted, should be removed within 24 hours, and the parts well syringed with weak Condy's fluid, and painted over with the solution of iodoform in ether: the patient should rinse his mouth frequently if he is able to do so, especially after taking food, so that everything likely to favour the growth of bacteria may be as far as possible removed. He must be fed at frequent intervals with small quantities of milk and beef tea administered in a teaspoon if he can swallow, or by the nasal tube if deglutition is difficult or impossible. The administration of stimulants will depend upon the general condition of the patient. When the parts are soundly healed, the gap in the roof of the mouth must be filled up with a properly adapted obturator and artificial denture.

Result of the Operation. Speaking generally, the results of excision of the maxilla are not satisfactory; the mortality directly due to the operation is about 30 per cent., and only about one patient in every sixteen operated on for malignant disease makes a permanent recovery. This sad result is chiefly due to the operation being too long deferred, owing either to inaccuracy of diagnosis or to an unwillingness on the part of the patient to submit to surgical treatment. The causes of death after the operation may be thus summarized.

(a) Hæmorrhage may prove fatal at the time of operation either by inducing syncope or by obstructing respiration. Secondary hæmorrhage may occur whilst the sloughs are separating; if slight in amount it may be arrested by sucking ice, or by plugging the wound with strips of antiseptic gauze; should these measures fail, the wound must be opened up, and the bleeding vessels secured *in situ*; as a last resort it may be necessary to tie the external carotid artery.

(b) The shock of the operation is always severe, in some cases fatal. Prolonged and severe shock should be treated by the application of warmth, and the administration of brandy per rectum and ether subcutaneously.

(c) Cellulitis and erysipelas are apt to occur when the patient is old or broken down in health from visceral disease, chronic alcoholism, etc. These conditions demand the local use of antiseptics, scarification or incision of the swollen tissues, and a liberal supply of stimulants.

(d) Meningitis may result from extension of septic inflammation through the foramina at the base of the skull; practically nothing can be done to ward off the fatal result.

(e) Septic broncho-pneumonia is one of the most frequent causes of death; it is due to inhalation of septic matter from the mouth. The importance of rendering the mouth aseptic

prior to the operation, and of keeping it so afterwards, has already been insisted on.

(f) In many cases recurrence of the disease takes place even before the wound has healed, and as already stated the number of cases which permanently remain free from recurrence is very small.

PARTIAL EXCISION OF THE MAXILLA.

In some cases of innocent tumour of the maxilla it is possible to remove the whole disease without sacrificing the entire maxilla. In some cases the orbital plate may be preserved. In such the skin incision may be limited to the upper lip and the side of the nose, and the bone may be divided below the margin of the orbit by saw or chisel. The preservation of the orbital plate is a great advantage to the patient, since when it is removed there is serious disfigurement of the face, much cedema of the lower eyelid, and the eye itself may lapse into an unhealthy condition, and eventually be destroyed.

When the orbital and nasal portions of the maxilla are involved, and the palate sound, the latter may be preserved. The malar and nasal processes having been sawn through, a horizontal saw-cut is made above the alveolar process from the nose outwards towards the malar incision, and the piece of bone thus isolated prized out with a chisel or elevator, or wrenched away with lion forceps.

(To be continued.)

CAMPBOR FIENDS. The recent discovery, on the streets of St. Louis, of a woman unconscious from the effects of an over-indulgence in camphor, has brought to light the fact that the habit, while a strange one, is by no means a rarity ; a number of druggists and physicians testify to this. Camphor eating is not so pronounced an evil as the excessive use of some other drugs, but it is nevertheless an existent evil.

North American Medical Review.

VALEDICTORY ADDRESS.*

By ALFRED SMITH, L.D.S. Eng.

Gentlemen,—In bidding you farewell as your president, it is the custom, and a very good one too, to spend a few moments in reviewing the past year's work.

Twelve months ago I indulged in a hope, quite a selfish one, that I might gain something for myself at these meetings. That hope has been more than justified.

I am glad to feel that I am still student enough to take advantage of such excellent opportunities, and shall always look back on the past year as one of profit as well as pleasure in connection with this Society.

Early in the Session at a meeting more numerously attended than any other, our friend, Mr. Bland Sutton, delivered a very eloquent and interesting address on "Tumours of the Jaws."

His masterly grasp of the subject, his lucid explanation of the difficult points involved, his genial and unobtrusively simple manner, and intense enthusiasm proclaimed the genius of the man.

He is not connected officially with our hospital, as you know, and for him to give up an evening out of his busy life with the many calls he has on his time and energies, shewed a kindly feeling to us, which I am glad to say was keenly appreciated.

Advanced Caries was the subject of our next paper, one of supreme importance to us, for in spite of our efforts, at any rate in this generation, we shall always have Caries with us.

Ancient Dentistry, our next paper, besides provoking a very interesting discussion, demonstrated conclusively that

* Read before the National Dental Hospital Students' Society.

there is nothing new under the sun, at all events in dental work.

The subject of "Anæsthesia" was ably presented to our notice by two members of our staff, both practically and scientifically, and the discussions that followed showed how well the introduction of such an interesting matter was appreciated.

Microscopy, photo-micrography, and a very useful complement of Casual Communications, completes to my mind a very satisfactory list of work for the year.

Thus it is apparent our papers and discussions have covered a most extensive field for which we have every reason for congratulation.

May I here very delicately echo a wish, I think you have heard before, that members would come forward more numerously at these meetings, and more freely express their ideas, or enquire for those of others.

I know too well the nervous feeling that has to be overcome in making a first effort, but the ice once broken, the first plunge made, and progress is sure to follow, and the effort develop a faculty of self control that is useful in every department of life.

Students at the beginning of their career are sometimes appalled at the amount of knowledge to be acquired before they can hope to appear successfully before the examiners, and naturally enquire in every direction how they can dispense with some of the apparently useless subjects of the curriculum, never taking into consideration that the said curriculum has been carefully thought out and compiled by experienced men who have themselves gone through the same studies, and whose aim is not to make the attainment of the diploma more difficult, but to ensure the holders thereof being good dentists in every sense of the word.

"The public know little and care less how many prizes you

have won, or what diplomas you have taken. But they do care whether you can do your work or not." These are the words of a well-known teacher of surgery, at a prize-giving meeting of students.

So that the real value in the possession of a diploma rests on the certainty or otherwise of the training necessary to acquire it, fitting the possessor for his future career. Whereupon it may happen that the failure at an examination, bitter hardship though it seems at the time, is not an unmixed misfortune, for the extra training demanded before the next attempt, may, nay, is certain to have a most beneficial effect in the future from the extended experience rendering one's work easier, and the conquest of difficulties more certain.

The minimum—two years of hospital work—necessary to complete the Dental Curriculum, certainly affords ample time under ordinary circumstances, and if all goes well, but unforeseen obstacles arise and accidents occur to bar one's smooth and continuous progress, and if not, an extra six months devoted to the more deliberate fulfilment of the curriculum will never be regretted in after life.

To those members of our Society whose beaming countenances proclaim that they have passed the rubicon and are fully qualified to look after the dental interests of Her Majesty's subjects, I would say, do not forget your Alma Mater, do not despise the ladder up which you have climbed step by step to your present position. Consider that you are still part and parcel of it, and do all you can to further its interests in the best possible manner that lies within your power.

Whatever you have learnt within these walls that you find useful, generously distribute amongst your professional brethren if need be. Remember the men who laboured in the past to obtain for you the advantages, educational and otherwise, that you now enjoy, who spared neither time, ability, nor health itself in their endeavours. Try to march

in their footsteps, carry on their traditions, that you may help to raise still further our position as a profession in the scientific world, and in that noble army of workers in the healing art, whose glorious aim is to alleviate suffering, and stamp out disease wherever found.

Try to make others better,
Try to make others glad,
The world has so much of sorrow,
So much that is hard and bad.
Love yourself last, my brother,
Be gentle and kind and true,
True to yourself and others,
As God is true to you.

And now, Gentlemen, my last word as your President is spoken. I thank you for the pleasure I have experienced in this Chair, and especially for your kind forbearance at my many short-comings. Allow me to conclude with a word of welcome to your new President. His ability is well known, and of his interest in the welfare of the Society, you will soon, I am sure, have abundant evidence.

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 78.)

In the selection of teeth to be used for clasping, we must take into consideration their position, shape, and soundness. We must not adjust clasps to loose teeth, because however much the clasps may be tightened, they would not ensure the stability of the case.

We should not only select our teeth as to strength and position, but must only use certain parts of them, in order, not only to admit of the ready insertion and withdrawal of the case from the mouth, but also to ensure the longevity of the tooth or teeth that we fix upon for retaining the work in position.

It has been advocated by some writers that when the plate has been trimmed up for the clasps, it should be placed in the mouth, and another impression taken with the plate in position, and a cast made therefrom in order to adjust the clasps. This we think in the majority of cases is quite unnecessary, for if the first plaster cast is good enough to work the plate to, it should of a necessity be perfect enough to fit the clasps.

To prove this, let us take the following illustration. Suppose a good impression in A 1, or Stent's composition, has been taken of a mouth in which there are several teeth standing, and these teeth somewhat long and straggling, and a vulcanite case has been made to the model cast from such impression, it will be noticed after the case is finished up, that it will not go into its place in the mouth. Why is this? Simply because it fits too well, or in other words that the vulcanite has copied, and filled up, most accurately the spaces between the teeth, which spaces as one is well aware, are wider at the gum margin than at the points of the teeth, the consequence is, that until a portion is cut away, the case will not go into its place.

This illustration brings me to the point I am aiming at, viz., how much, and what part of a tooth, should be used for clasping.

The neck of a tooth unless that tooth is very short and cone shaped, is not the proper place for a clasp, for the presence of a wire around it means sooner or later its destruction. We should where possible endeavour to support

our work by lateral pressure, and such pressure should be exerted as far away as possible from the margin of gum or necks of teeth.

The lateral bands should form little wings (see Fig. 14),

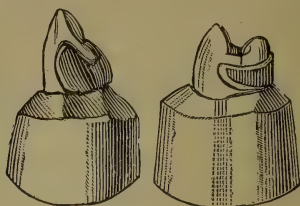


Fig. 14.

and should be applied against the bulbous portion of the tooth, very little pressure being necessary if the plate fits properly.

Broad bands should be used in preference to wires for the bicuspid and molars, or if wire is used it should be free from the neck of tooth and bent up at right angles at the end so as to apply the pressure where required.

It will thus be perceived that one good model is all that is necessary for if we were to make our clasps fit the approximal sides of the teeth, we could not get the plate, without great difficulty, into the mouth, nor remove it again, without exerting such an amount of force as would be seriously detrimental to the natural teeth present, for no obstacle should be presented to the patient to interfere with its ready withdrawal for the purposes of cleanliness.

Stout tin or lead foil may be used for making the pattern for the clasps. The student should always be instructed to cut out patterns for his clasps, it educates his eye, both as regards the shape of the tooth, and also the contour of the gum. For the more expert workman this is not necessary, he simply requires to ascertain the length and the greatest width of the clasps. When the clasps are fitted they should be fastened

in position by means of hard wax, just warming the plate and melting a little hard wax on it. The pattern for the clasps should be cut out lengthways of the gold, that is, the way it has been rolled, and it should be frequently annealed during the bending up. When fastening the clasps to the plate, they should fit into their places without the slightest pressure. The plate with the clasps attached, is carefully removed from the model, and a little thick borax is painted in the interstices on the under surface of the plate, between the clasp and plate, if any exist. The object of this is to fill up the spaces, keep the investment out and allow of the ready flow of the solder through, to make a perfect joint.



Fig. 15.

The case should now be sunk in brickdust and plaster, sand and plaster or pumice and plaster, mixed into a thick batter with water ; each of these investments will answer the purpose. We give the preference to the former, as being a material easily and cheaply obtained, and at the same time not likely to discolour the teeth. The investment is mixed at the time of using in the proportion of two-thirds brickdust. The object of mixing any of these ingredients with plaster is to render it more porous or open in texture and lessen its liability to splitting or warpage when heat is applied to it.

In order to still further lessen the liability of warpage, it is usual to embed a coil of iron wire in the investment, at the same time as the plate is sunk into it. This wire may

also take the form of a small gridiron (Fig. 15), which can be made of a couple of strands of fairly thick iron wire twisted for about eight or ten inches to form a handle ; the two free ends can then be spread out and coiled into a suitable shape, to securely hold the investment. The handle thus formed also serves to hold the case by, while it is being soldered.

The investment is meant to support the clasps in the position they are to occupy on the plate, and it should be kept away from those places where the solder is required to flow.

When investing a case, care should be taken that there are no overhanging edges of plaster, as these would prevent the flame from acting directly on the spot to be soldered, and a risk would be run of sweating another portion of the plate.

It is as well to trim the investment down to the edge of the bands.

When the investment is set it should be placed on a piece of sheet iron, suspended over a Bunsen burner in order to warm it and soften the wax ; this should not be allowed to melt, but only to soften, when it may be removed *en masse*, or if not, boiling water may be poured over it to clear the remainder away.

The next operation is to prepare the invested plate for the soldering process.

To be continued.

Dr. Miller considers starchy substances much more detrimental to the teeth than sugar, as sugar is readily soluble, is soon carried away, or is sufficiently diluted by the saliva, as to be rendered almost harmless ; whereas starchy matter adheres to the teeth for a longer time, thus exerting a more continued action than the sugar. *Dental Review.*

British Journal of Dental Science.

LONDON, FEBRUARY 1, 1896.

PROTECTION BY MONOPOLY.

The Dundee newspapers last month contained reports of the prosecution of an unregistered man who was practising as a dentist. The proceedings took place in the Sheriff Court, and seem to have caused a good deal of local excitement ; there have been leading articles and letters, and one gentleman who was kind enough to forward us newspapers, even felt constrained to break the post office regulations, and favoured us with some remarks on the margin, besides enclosing an anonymous letter. So long as it is thought expedient to prosecute in such cases, it is perhaps well that all parts of the country should be treated alike, for education in the provisions of the Dentists' Act extends locally outside the court-house in which the case is tried, and even there it is sometimes wanted. In the instance under notice, the defendant was charged with eight different counts, and the whole of the first sitting was taken up by discussions between the legal gentlemen and the sheriff. Certain objections to the complaint were first made and over-ruled, but the arguments upon these served to clear the way, and the Sheriff seems to have been in a humourous mood, and finished up with a little anecdote which caused "great laughter."

Amongst other things, the defendant's representative insisted that however the prosecution might try to disguise the complaint, the case was an attempt by the registered dentists to elicit a legal opinion on the question of whether an unregistered man was entitled to advertise. Needless to say this statement was satisfactorily dealt with in the reply of the prosecution, and the Sheriff concluded the day's proceedings by giving his interpretation of the Act. The question was whether there was enough in the complaint set

forth that the defendant had violated the provision of the Act by passing himself off as a dentist, dental practitioner, or a man so qualified as to be capable of being duly registered, or implying that he was duly registered under the Act. He thought the complaint sufficiently showed this, and the case was adjourned for the matter to be proved.

At the next sitting it was announced that, by agreement, most of the counts had been withdrawn, and the defendant pleaded guilty to having described himself as "successor" to a gentleman who was registered and who was entitled to be, and was so described, as a dental surgeon. It had, however been previously stated that defendant had already removed all such signs as "surgeon dentist," "dentist," &c., for the use of which he was charged. Again there was a somewhat protracted sitting, but we have no fault to find. The Sheriff seemed anxious to know what would become of the fine, and asked whether it was not rather an encroachment on the freedom of English speech to set apart the word dentist to 300 or 400 men. The prosecution ventured to correct the figures to 3000 or 4000, and pointed out that one could not get away from the Act. Then the Sheriff speculated as to whether the defendant might not have been in furnished lodgings and unable to interfere with his landlord's arrangements for keeping up signs. "Acts of Parliament ought to have reason and justice at the back of them. Can you tell me what justification there is in reason for the imposition of a penalty on a man calling himself a dentist?" The prosecution made the proper reply that it was for the protection of the public. The Sheriff ultimately found "it was his duty to administer the law according to its fair meaning and intent. It was no part of his duty to scrutinize the principles of justice that underlay a statute except in so far as to see that he did not carry its effects if he could help it beyond the confines of justice."

We quite agree with another remark in the course of his judgment. "Protection of the public was a necessity, but a monopoly not, except in so far as it contributes to the former." Then there were further references to "right and

wrong," "individual freedom," &c., and a statement to the effect that law and medicine required a special education and attainment in the public interest. Theological theories (heterodox ones we suppose) hurt no one, although occasionally driving silly people into an asylum; and therefore there is no ecclesiastical monopoly. We thank the Sheriff for an interesting and amusing lecture, especially as he finished up well. "The only principle that could justify this prosecution he found was not to support a monopoly, though that might be a consequence, but to put a stop to the practice of deception." After a further reference to the English language, and to Mr. Justice Hawkins' decision in the "veterinary forge" case, the Sheriff imposed upon the defendant a nominal fine of one shilling, and two guineas costs, with the alternative of six days' imprisonment.

DENTISTS' CHARGES.—A general practitioner in a large town writes to the *British Medical Journal* for advice. He is on very friendly terms with the principal dental surgeon, who lives in the same street, and has put "a good deal of money in his pocket." The doctor's wife had two or three teeth stopped and five artificial molars inserted. The skill and workmanship left nothing to be desired, but when a bill for six and a half guineas was presented for professional services, the doctor thought it a good deal. Should he pay the amount, or would it be *infra dig.* to write and ask for a reduction? He is quite willing to pay a fee for skill and time. The *Journal* thinks he had better send a cheque with a "courteously expressed demur" to the justness of the fees charged for professional services, and in the future seek advice elsewhere. If it turns out that the dentist has charged for the artificial teeth under the term professional services, there is nothing to be complained of, and he has probably not charged a fee for anything else. Medical men should always pay for

mechanical work, but are not necessarily charged for skill and time in ordinary operations.

THE IRISH PHARMACY ACT.—Judgment has been given in the Queen's Bench Division of the High Court, Dublin, in the case of *Cleeland v the Pharmaceutical Society of Ireland*. Mr. Cleeland had obtained a conditional order for a mandamus to compel the Society to admit him to examination for their licence : this they had refused to do in consequence of his certificate of apprenticeship to a firm of pharmaceutical chemists being signed by a member of a limited liability company. The company consisted of three ladies, a clergyman, five male persons of no specific occupation and two registered pharmaceutical chemists. It was contended that this did not constitute a firm of legally qualified pharmaceutical chemists, and the judges although considering it a hard case, decided that it was impossible to assist the applicant by granting a mandamus.

INSURANCE COMPANIES AND THE TEETH.—At a dinner of dentists an insurance company representative, who was called upon to respond to a toast, said that to such an extent were insurance companies convinced of the importance of the soundness of the teeth in the determination of the fitness of applicants for insurance, that they were now giving teeth inspection the first place in the list of tests. Heretofore the state of the lungs, the heart, and the kidneys had been the primary considerations, but henceforth the examination of the mouth will be the first thing that the inspecting medical officer will proceed to in the case of insurance applicants. What was the use of anxiety as to the power of the driving wheel, the fit of the valve, and the stroke of the piston of the engine, if the condition of the furnace were neglected, and insufficient provision were made for the proper combustion of the fuel on which the working of the whole machine depended ?

THE FIRST PERMANENT MOLARS.—We are generally told that these should not be extracted until the second ones have erupted. Dr. W. E. Marshall, however, says that as a rule they should always be retained in position until the eruption of the bicuspid. Then if their structure and their tendency to decay seem to predict their loss within a few years, their removal before the eruption of the second molars is advisable. He so frequently sees good results from their extraction before the eruption of the second molars as compared with the disastrous results of their removal after that period, that he deems it a safe rule, where there is not a probability of preserving them permanently, to extract them before the twelfth year, while subsequent to that period every effort should be made to preserve even their roots.

ADVERTISING DENTISTS.—The *British Medical Journal* thus replies to a correspondent. To avoid the penal clauses of the Dentists' Act which, as we have previously pointed out, are rather strong, persons who are unable to register as dentists because of their inability to satisfy the General Medical Council have in many instances combined and formed themselves into companies. Occasionally the founders have been registered practitioners, who would appear thus to desire to cover the unregistered ones. These companies are called by their promoters dental institutes, dental associations, etc. One such establishment, which has some six or eight branches throughout the country, receives the imprimatur of the Army and Navy Stores; we believe some few years ago the British Dental Association approached the directors, but without success. It is much to be regretted that such an alliance should be allowed either by the directors or shareholders of the stores. In the pamphlet that is periodically issued by this last-named institute, the words "dentist" or "dental surgeon" are not used in connection with any of the operators. It would be well if our readers would note this, and not only avoid such places themselves

(even though they be asked to administer anæsthetics there) but also educate the public to avoid them also. One such association, calling itself the American Dentists' Association, was prosecuted recently, and the magistrate characterised the whole association as "bunkum," and inflicted a fine of £10. We have no hesitation in saying that all such companies are "bunkum." Even at the risk of repetition we would like to point out that dentistry as practised in America in no way differs from that practised by the leading dentists in other countries. But these companies and other quacks, by circulating illustrated pamphlets pointing out the merits of so-called "crown," "bar," and "bridge" work, endeavour to lead the public to infer that the dental surgeons of this country do not know how to adjust such systems. This is not true, for at all the dental hospitals these methods are taught, and their respective merits and demerits pointed out. At the examination for the licence in Dental Surgery a candidate is very often required to manufacture a "crown" before the examiners.

A CORRECTION.—In our translation of Heer Stark's address on Dental Education in Holland, we made him say that "in Dentistry general knowledge is a mark of incapacity." The expression really used means superficial, or generalised, knowledge. As this alters the meaning of the sentence we are anxious to draw our readers' attention to the sense in which the word *general* was intended to be used.

NOMENCLATURE.—The words "prosthesis" and "prothesis" are used as synonyms. The meaning of the prefixes is slightly different in the original language, "pro" meaning "to put before or to stand before;" "pros" meaning "to place, or to put to place or position," the committee of the American Dental Association has adopted the word "prosthesis" as being the proper term to use.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The Annual General Meeting of this Society was held on Friday, January 10th, 1896, the President, Mr. Alfred Smith, being in the chair.

The Minutes of the previous Annual General Meeting were read and confirmed, and the usual welcome given to visitors. The Hon. Treasurer then read the Report for the last year.

Upon Casual Communications being called for,

Mr. H. W. MOORE exhibited a mallet which he had invented for use with the dental engine ; its novelty consisted in the blow being transmitted through a series of small steel balls ; thus a mallet could be constructed having any angle, acute or obtuse, and even to work directly backwards. The absence of complicated parts at the angle rendered it smaller, and therefore less likely to obscure the work than other forms of mallet.

The election of officers of the Society for the ensuing year then took place.

T. G. READ, Esq., was proposed as President, and this was carried unanimously.

The Vice-Presidents were announced as follows:—

Messrs. Alfred Smith and C. W. Glassington.

A ballot having been taken, the following gentlemen were declared elected as Members of the Council:—

Past Students—Messrs. Farmer, Hill, J. W. Smith.

Present Students—Messrs. Wing, Thomas, Pearse.

Hon. Secretary to the Society—Mr. Storey.

Hon. Treasurer and Secretary to Council—Mr. Tattersall.

Librarian and Curator—Mr. Canton.

Auditors—Messrs. Wheeler and Moore.

The President then read his Valedictory Address, which is published at page 119.

A vote of thanks to Mr. Alfred Smith was proposed by Mr. Spokes and seconded by Mr. Farmer.

This was most heartily given, and Mr. Alfred Smith having replied, the proceedings terminated.

Dental News.

DENTAL PROSECUTION IN DUNDEE.

In Dundee Sheriff Court on the 17th ult., A. Davie, South Lindsay Street, was charged with offences against the Dentists' Act, the complainer being the Hon. Secretary of the British Dental Association. The complaint, which was laid under the Summary Jurisdiction (Scotland) Acts, 1864 and 1881, and the Criminal Procedure (Scotland) Act, 1887, set forth that A. Davie, 3 South Lindsay Street, Dundee, not being a person registered under the Dentists' Act, 1878, and not being a legally qualified medical practitioner registered under the Medical Act, 1886, did at the times and places mentioned in the complaint represent himself as a person registered under the said Dentists' Act, or that he was a person specially qualified to practise dentistry, and was a legally qualified medical practitioner registered under the said Medical Act, or as possessing one or more of these characters and qualifications, by having, during the last five months of 1895, had attached to the gables of his house or the windows, "A. Davie, successor to Dr. Stewart," and during a portion of the time the additional words "Surgeon Dentist," the said Dr. Stewart having been a duly registered dentist. He was also accused of having displayed on the east gable a side-board bearing the words "Mr. A. Davie, successor to Dr. Stewart. Teeth, teeth, teeth," &c. The fourth head charged him with advertising in somewhat similar terms on the private lamps in front of his house; the fifth with using the name or title of "dentist" by having it cut on a stone on the pavement; the sixth with having inserted in the "Dundee Directory" of last year the title, addition, or description of "Dental Institute" along with his name; the seventh with causing to be inserted in the same publication an advertisement wherein there were *inter alia* "popular dentistry," "dentist," "surgeon dentist," "successor to Dr. Stewart;" and the eighth charged him with inserting an advertisement in the *Evening Telegraph* with references to his work and charges, hours of attendance, and signed "Mr. A. Davie, successor and 10 years branch manager to Dr. Stewart, South Lindsay Street, Dundee. Established 1842." All these charges, it was alleged, Davie committed contrary to the Dentists Act, 1878, Section 3, as amended by the Medical Act, 1886, Section 26, whereby he was liable in a penalty not exceeding £20.

Mr. Andrew Buchanan appeared on behalf of the complainer, Mr. H. S. Glenny represented accused, and Mr. A. M. Ferguson watched the case on behalf of the Unregistered Dental Practitioners' Association.

Mr. Glenny took exception to the complaint on the ground that the prosecutor was not present himself. Section 9 of the 1891 Summary Jurisdiction (Scotland) Act—one of the statutes on which the complaint proceeded—provided that every complaint at the instance of a private prosecutor or complainer under the Summary Jurisdiction Acts must be signed either by the prosecutor or complainer or by a duly qualified law agent on his behalf, and such law agent might in the absence of the private prosecutor appear in Court and conduct the prosecution on his behalf. The complaint was signed not by a law agent, but by the prosecutor himself. In these circumstances the authority which this Act conferred upon a duly qualified agent to appear on the prosecutor's behalf did not exist. It was only when the complaint was signed by an agent on behalf of the principal that an agent could appear. If a principal

chose to sign the complaint himself he must conduct the prosecution personally.

The Sheriff asked what was the statutory authority for this English gentleman appearing at all as a prosecutor in a Scotch Court.

Mr. Glenny replied that he supposed the authority was conferred by Section 26 of the Medical Act, 1886, which made a complaint possible at the instance of a private prosecutor, where such a complaint had only previously been possible at the instance of the Council.

The Sheriff—What kind of prosecution is it?

Mr. Glenny—It is a prosecution for a statutory offence.

Mr. Buchanan—Imprisonment being competent makes it criminal.

Mr. Glenny—Imprisonment is only possible if the fine is not paid.

The Sheriff—Will that make it a criminal offence?

Mr. Buchanan—A quasi-criminal offence.

The Sheriff—If it is a criminal case it must be sent to the Fiscal.

Mr. Buchanan said it was brought under the Dentists' Act of 1878.

The Sheriff—This gentleman who prosecutes is a private person merely? He does not prosecute in an official capacity?

Mr. Buchanan—I have inserted the designation of the prosecutor in order to remove any possibility of a suggestion on the other side that it was a trumped-up case.

Mr. Glenny said the statute did not prohibit a man from practising as a dentist, but it prevented him using the term dentist or dental practitioner, or words which would imply that he was registered under that Act; or that he was a person—and this was the crux of the whole case—not “qualified to practise,” but “*specially* qualified to practise dentistry.” Unless the prosecutor could show that his client had been representing himself to be a person specially qualified in the sense of the Act there could be no case against him.

The Sheriff said he could not sustain the objection. As he read the Act a private prosecutor might do the work himself if he liked, or he might employ a qualified legal practitioner to do it for him, or he might do part of the work and get a qualified legal practitioner to do the rest. It was a very common practice for a private prosecutor to sign papers and get a legal practitioner to do the work. His Lordship had had several poaching cases before him that day, and all the complaints, if he remembered aright, were signed by policemen. A qualified legal practitioner, however, appeared to lead evidence.

Mr. Glenny asked the Sheriff to note his objection in view of the case going elsewhere.

The Sheriff—I see plenty of confusion for the case to go anywhere. (Laughter).

Mr. Glenny said there were two “A. Davie’s” at the address stated in in South Lindsey Street. He did not know which one his friend was to take. (Laughter).

The Sheriff—Take them both. (Laughter).

Mr. Buchanan—I’ll take the man the complaint was served on.

Mr. Glenny proceeded to object to the relevancy of the six and seventh counts.

The Sheriff—It is a very long document. This prosecutor must have been descended from some Scottish evangelical preacher. His complaint has eight heads. (Laughter.)

Mr. Glenny further contended that the sixth count was entirely irrelevant, for the reason that the locus and time were not stated. The same objection applied with equal force to the seventh count, it having to be averred also that the offence was committed within six months of the date mentioned. With regard to counts 3 and 8, it was said that his client was contravening the Act by having attached certain words to

the gable of his place of business. But he would point out to his Lordship that these words applied to Mr. Davie's work, not to Mr. Davie himself. In count No 8 the words "a marvel of cheapness—unequalled in the profession" were taken exception to.

The Sheriff—What profession is referred to?

Mr. Glenny—Profession means anything. I have known a man who was a joiner subsequently registered to draw teeth, and call himself a professional man. (Laughter). Mr. Glenny then went on to speak of the business conducted by the late Dr. Stewart. That business had been carried on by the deceased gentleman for many years, and amongst his servants was Mr. Davie, who managed several of his branch establishments.

Mr. Buchanan objected to Mr. Glenny's leaving the question of relevancy.

Mr. Glenny said he was endeavouring to show that Mr. Davie was no quack.

Mr. Buchanan—That my Lord, is a question for proof. (Laughter).

Proceeding Mr. Glenny stated that after Dr. Stewart's death his widow continued to conduct the business with the aid of assistants. After a time she sold the business to Mr. Davie, and he entered into the premises as successor to Dr. Stewart in May 1895. Dr. Stewart's old signs were then existing. Having been registered under the Act, Dr. Stewart displayed such signs as "surgeon dentist," "&c., and particularly he had engraved on his windows the words "surgeon dentist." That was the position of matters when Mr. Davie took over the business. That was not the position of matters now, however, for Mr. Davie had had every objectionable sign removed, and his Lordship was asked to punish him for an offence he had never committed. Disguise this complaint how the prosecution might, heap charges upon charges as they liked, the glaring fact remained that this was an attempt by the registered dentists to elicit a legal opinion on the question of whether an unregistered dentist was entitled to advertise. That was at the bottom of the whole complaint, and nothing else. Under their regulations the registered dentists were prevented from advertising. They got their diplomas upon the condition that they did not advertise, and they gave a guarantee that they would not do so. But they were feeling the pinch of those gentlemen who were equally capable, but who did not care to become registered under the Act. That was the position of affairs. They were brought face to face—disguise it as they might—with an attempt on the part of the Dental Association, with comparatively few members, to force upon people who were not subject to their jurisdiction an offence and penalty for advertising their business. Mr. Glenny then read the advertisements complained of and pointed out that in none did a word about dentistry appear, and he submitted that in so far as they did not imply that Davie was a person "specially" qualified to practise dentistry he committed no offence. Proceeding, he said although there was a penalty against a man practising medicine, there was no penalty against a man drawing teeth.

The Sheriff—Except an action for damages for pulling out the wrong one. (Laughter.)

Mr. Glenny said he objected to the complaint, on the ground not only that it must specify that he was not a person registered under the Act, but it must specifically state that he did not fall under one of the exceptions of the Act.

Mr. Buchanan said Mr. Glenny had missed the most important part of the complaint. He was charged with a specific breach of a statute, and the complaint mentioned eight different ways, in any one of which the prosecutor could prove that he had committed an offence. If the prosecutor proved one of these ways he was entitled to a conviction. Count

No. 3 of the complaint dealt with the signboard, in which it was stated that he was the successor to Dr. Stewart, who was a registered dentist. Mr. Davie was not in a position to carry on the practice that Dr. Stewart did, and in using the words "successor to Dr. Stewart" he was using words that fell within the terms of the Act of Parliament. If a man advertised himself as successor to Dr. Stewart, he thereby implied that he was a man in the same position and qualified to do the same business as the gentleman to whom he said he was successor. Mr. Buchanan then quoted a number of authorities in support of the relevancy of the counts of the complaint.

The Sheriff said he read the Act to mean that it was to be penal for any man to call himself a dentist or dental practitioner, or to use any such words as would have the effect of passing himself off as registered under this Act of Parliament, and that he was specially qualified to practise dentistry. That was to say, that he was sufficiently qualified to practise dentistry as to entitle him to be registered. It was to stop a representation of that kind, unless where the person was registered. It was to provide that a man working among teeth, and professing to do what was necessary in the way of pulling and stuffing them, should be properly qualified, and that he should not pass himself off as a registered practitioner unless he was actually registered. The question here was whether in this complaint there was enough to set forth that Davie had violated the provision of the Act by passing himself off as a dentist, dental practitioner, or a man so qualified as to be capable of being duly registered, or implying that he was duly registered under the Act. He thought the complaint sufficiently set forth that Davie violated that provision of the Act of 1878. The objections to the relevancy of the libel had been stimulated and probably induced by the prosecutor giving rather too much information—more information than he was bound to give in the way of details—and in giving, in fact, a sort of synopsis of a precognition. All that required to be stated was that within a certain time—within six months—Davie used the term "dentist" and made other representations to the effect that he was a registered practitioner under the Act. Mr. Glennie had referred to the exception in the case of medical practitioners, but his Lordship thought the doctrine had been laid down and acted upon in England that where an exception was to be pleaded in defence it was for the accused to prove the exception, and that it was not necessary to negative the exception in the complaint or by the evidence adduced in support of the complaint. The result of legislation like this was to set aside certain professions for certain people. A man might be qualified to be a Professor of Chemistry, and yet be prosecuted if he were to sell goods upon the representation that he was a chemist. The word dentist was rendered sacred to this registered body, and no one was entitled to use it unless a member of that body. If a prize-fighter called himself a dentist he would be liable to prosecution under this Act of Parliament, although he had no instruments for extracting teeth except his fists. (Laughter.) This legislation had for its purpose the preservation of innocent and gullible members of the public from believing representations that were made, and from trusting themselves to the skill of persons who pretended to be doctors, chemists, and dentists, and who had no proper skill or qualification, and who might do a great amount of mischief to them; and it was left to a private person sometimes, and in other cases to public authorities to prosecute. In regard to the title to prosecute here, there could be no doubt whatever, except that the prosecutor seemed to be an Englishman. Any dentist in Dundee, so far as his Lordship could judge, could have prosecuted just as well. As to the objection that the date of the advertisements was not given, all that it was necessary to show was that the course of misrepresentation went on within six months. "Successor to

Dr. Stewart" was an ambiguous term. It might mean successor to some part of his business or to his house, but it did not prove much, and certainly did not prove that Davie represented that he succeeded to Dr. Stewart because Dr. Stewart was a registered dentist, and that he also was the same. Some people might reason that way. There was a St. Andrews story his Lordship had heard that implied that kind of reasoning. A gentleman who used the title of Major was once golfing in St. Andrews, and some one asked his "caddie" to what regiment the Major belonged. The "caddie" said—"Weel, I dinna think he's a Major at a'. He married a Major's widow, and keeps up the title." (Laughter.) That was the kind of successor it might have been. (Great laughter.) His Lordship concluded by remarking that he would have been glad to avoid proof in this case, but he did not see it was possible to do so.

After some conversation with the agents as to the nature of the plea to be tendered, the Sheriff said he did not think it was a serious case at all. It did not require a gentleman from London to protect the teeth of the people of Dundee, as the Small Debt Court could do it as well.

Mr. Davie finally denied the charge, and the case was continued for proof until the 20th, when Mr. Glenny stated that, following on what took place at the last sitting, the agent for the prosecution and he had had several consultations regarding the matter. The result of these consultations was that they had adjusted a limited plea. The specific charges 3, 4, 5, 6, 7, and 8 were all withdrawn. Under 1 and 2 accused proposed giving a limited plea that during a portion of the time mentioned in the libel he contravened the Dentists' Act, section 3, by having the words, "Dr. Stewart, surgeon-dentist," upon the windows of the premises of which he was a tenant.

Mr. Buchanan, who intimated his acceptance of the plea, said, under the section of the Act, the penalty was a fine not exceeding £20 and expenses.

The Sheriff—Where do you find expenses?

Mr. Buchanan—Under the Summary Jurisdiction Act.

Mr. Glenny said he was afraid he could not plead that a private prosecutor was not entitled to expenses, although a Public Prosecutor was not entitled to them unless the Act under which he prosecuted specially allowed them.

The Sheriff—What is to become of the fine if I impose it?

Mr. Buchanan replied that the Queen's Remembrancer had sent out a circular to the effect that the fine was to go to the Exchequer.

The Sheriff said he did not know the Queen's Remembrancer had power to supplement Acts of Parliament.

Mr. Buchanan—It would probably fall on a Treasury minute.

A CASE FOR A NOMINAL PENALTY.

Mr. Glenny stated that his client had pleaded guilty to a very technical breach of the Act, and that being so, it was only a case for a nominal penalty. It was the first prosecution of the kind in Dundee, and it was not the aggravated offence of a person actually putting up the words complained against, but it was the simple infringement of allowing words which previously existed to remain for a longer time than perhaps should have been done. Mr. Davie became successor to Dr. Stewart on 28th May last, and at that time there were a large number of signs up, and, so far as practicable, Mr. Davie removed all those signs between the time of his entry and July. The words he had pleaded guilty to using were painted upon the windows, and they remained there till September. The reason why the signs were left so long was partly on account of the painter's strike, which lasted for six months, and only terminated sometime in July. Following upon the settlement, there was a fort-

night's holiday. He submitted that the sign was removed with all reasonable despatch. It was not there now, nor was there any sign which was objectionable to the Act. The word "dentist" on the carriage door step, which was cut out by Dr. Stewart, was cemented up in July, and when it was picked out by boys, it was again cemented up. Mr. Davie had done his best to prevent a contravention of the Act, and he had no intention whatever of contravening the Act in the future. Seeing that it was not a sign actively put up by him, but one that was passively allowed to remain, it was a case for a very modified penalty. Mr. Davie had incurred considerable expense in the case already, and the plea which had been accepted had been offered all along.

Mr. Buchanan said he wished to controvert the statement made by Mr. Glenney that this was a merely technical breach of the Act. Accused had pleaded guilty to using the words "surgeon dentist" on the windows of his premises during a portion of the time between July and December.

The Sheriff—Is it not rather an encroachment on the freedom of English speech to set apart the word "dentist" for the use of 300 or 400 men?

Mr. Buchanan—There are some 3000 or 4000.

The Sheriff—The English language would become very scarce of words by and by if every 3000 or 4000 people were to claim one single word. (Laughter).

Mr. Buchanan—There is no getting behind the Act of Parliament. The same principle applies to veterinary surgeons and chemists.

The Sheriff—There is no Act of Parliament against using the word "Doctor," except in a certain sense.

Mr. Buchanan—There is an actual Act of Parliament here. I do not think we can go beyond that. Using the words "surgeon-dentist" does not form a merely technical breach of an Act which prohibits an unqualified person using the word "dentist" at all.

The Sheriff—He may have been in furnished apartments. (Laughter).

Mr. Buchanan—He has pleaded guilty to being a tenant of the premises.

The Sheriff—Lodgers cannot meddle with landladies' windows. (Laughter).

Mr. Buchanan—Even if he had been a lodger and used the words he would have been liable under the Act.

The Sheriff—If he used them; but if he merely looked at them. (Laughter).

Mr. Buchanan—If by the use of the words he induced people to enter his premises and operated on their teeth he would be liable.

The Sheriff—He is not charged with drawing teeth.

Mr. Buchanan—He is charged with representing himself as a dentist, and has pleaded guilty to that.

The Sheriff—It would be a far stronger case if it were proved that he said to some one that he was a registered dentist.

Mr. Buchanan—I am not bound to enter into that.

The Sheriff—That is the reason I did not sustain the plea of irrelevancy.

Mr. Buchanan referred to previous prosecutions in Cupar and Edinburgh and stated the penalties imposed ranged from £2 10s to £7, with expenses.

Mr. Glenney—There were several cases in England and Ireland where the expenses had been modified to £1 ls.

Mr. Buchanan—I never heard of them.

The Sheriff—Acts of Parliament ought to have reason and justice at

the back to them. Can you tell me what justification there is in reason for the imposition of a penalty on a man calling himself a dentist?

Mr. Buchanan—It is to protect the public.

The Sheriff—That is to say, to secure to the public that the man who does the work of a dentist shall be properly qualified?

Mr. Buchanan—Yes.

The Sheriff—The public generally can protect themselves against people improperly skilled.

Mr. Buchanan—Probably after experience.

Mr. Glenny—My information is that there is only one registered dental practitioner in Dundee who is qualified by University training for the practice of dentistry.

Mr. Buchanan—I am afraid I must contradict my friend.

The Sheriff—I do not see how it requires a University training to be a dentist any more than it requires such a training to be a cabinet maker or a jeweller. (Laughter).

The Sheriff said it was his duty to minister the law—both statute and common—according to its fair meaning and intent. It was no part of his duty to scrutinize the principles of justice, that underlay a statute, except in so far as to see that he did not carry its effects if he could help it beyond the confines of justice. Every penal Act required to be strictly construed, more especially an Act imposing penalties, which had the double purpose of protecting a monopoly and protecting the public. The latter was a social necessity; the former was not, unless in so far as it contributed to the latter. No monopoly could be justified by the principles of any code of social philosophy except the principle that the special monopoly was upon a wide view of the interests of society for the greater advantage of the whole community. That alone in the field of right and wrong could justify interference with individual freedom—that was with the unfettered freedom of trade and of personal skill and labour. The professions of law and of medicine were strongly fenced in as monopolies because a special education and standard of attainment was expedient in the public interest to protect bodily health and organic structure and function from the experiments of rashness and of ignorance, and the property and freedom of individuals from the exhortations of persons with zeal without knowledge, and the irresponsible advices and devices of swindlers and beggars. The Church was not so well fenced in except as to manes and stipends and creeds established by statute, or settled by contract, because the religious advice of fanaticism and of ignorance sometimes did good even in the way of amusement—(laughter)—and beyond sending an occasional nervous weak-minded person to a lunatic asylum never did any harm. That dentistry—that branch of the medical and surgical art which related to the care of the teeth—should be constituted a monopoly in the interest of specially skilled qualified persons, but also in the interests of the public, he was very far from doubting. He thought no one should be induced to trust a single tooth, however ruinous to an artist who pretended to have had a special dental education of the kind that was guaranteed by his being enrolled in a statutory register, when in point of fact he was not. On the other hand, he did not see why a joiner or a blacksmith, or a barber, or anyone that could use pincers should not draw a tooth if the person upon whom he was to operate was not deceived as to the nature and extent of his dental skill; or why a jeweller who worked in gold and precious stones should not make and do the necessary setting for false teeth, or of real teeth which had lost their natural foundations. When he looked anxiously for the only principle that could justify the prosecution, he ascertained that it was not to support a monopoly, though that

might be a consequence of it, but to put a stop to the practice of deception (if the deception be without purpose) or of positive fraud (if the deception be set about with intent to deceive). He had already decided that the use of the terms dentist and dental practitioner was forbidden to all except registered dentists under the Act of 1878, and the Medical Acts providing for registration. He might think that the statutory consecration of a word like "dentist" to the exclusive use of the institute of registered dentist or any other trade union, however educated and genteel its membership, was an interference with the free use of the English language which had no proper justification; but he had not been able to discover how he could help himself when he found that under a similar Act of Parliament Mr. Justice Hawkins, one of the most acute and accurate logicians in England and one of the most liberal minded and rationalistic occupants of the English Bench decided that it was penal for a tradesman so unscientific as a shoer of horses, which was to a greater and less extent the calling of every country blacksmith in Scotland, to describe on a signboard his establishment as a "veterinary forge," though the Sheriff fancied if he were like most English horse-shoers he would have described himself as a "veteran forger," or by any other flaunting epithet, with the serene indifference of ignorance. His Lordship had held the libel relevant, because he must, and might have had to determine whether it was proved and, if proved, whether the deception was innocent and unconscious deception, or that knowing, intentional deception which was of the nature of fraud. The plea of guilty now tendered and accepted rendered it unnecessary that proof should be led. The plea involved admission on the part of accused, after taking possession of the premises occupied by the late Dr. Stewart, that he allowed the words surgeon-dentist, painted on the windows for Dr. Stewart, and correctly designating him, to remain from June to September, when they were removed, as he understood, voluntarily, and not under threat of this prosecution.

Mr. Buchanan—With all due deference my Lord, yes.

Mr. Glenny—With all due deference, my Lord, no. (Laughter).

Mr. Buchanan—He was warned by the Association.

Mr. Glenny—The order to do this work was given long prior—immediately on Mr. Davie's entry.

The Sheriff said he took the deception caused by the allowing of these words to remain to be presumably—and he was obliged to presume all that was possible in favour of innocence—to involve the minimum of guilt or fault in so far as the statute was concerned. It would have been a very different thing if he had passed himself off to an individual as a registered practitioner. The criminality of failure to remove two painted words did not appear to his Lordship to be great when weighed in the scales of morality, and, if possible, still less when weighed in the scales of Mammon. He had no reason to believe that this unregistered dentist ever did any harm to the public or any member of it, considered merely as a member of the public. If he did, the law of reparation could be invoked against him. He believed accused had rendered cheap dental services to the poor. He doubted if he had deprived any dental registered monopolist of any lucrative part of his business. At all events, he did not feel bound to support any monopoly by the imposition of a vindictive punishment. The fine he imposed was the nominal one of 1s., and the expenses he allowed by way of enforcing and advertising the statute were £2 2s, the alternative being six days' imprisonment.

ANOTHER DENTAL PROSECUTION.

Ernest H. Richards, of Zingari Road, Gipsy Lane, Forest Gate, was summoned before Mr. Baggallay for taking and using the title of dentist without being registered as such under the Dentists' Act. Mr. Frederick George appeared for complainant, Mr. G. R. Matland, a registered dentist, of Romford Road, Forest Gate. Mr. Pettiver defended.

On December 31, Mr. Matland, accompanied by a lad in his employ, went to Gipsy Lane and asked to see the dentist. He was told the dentist was engaged, but he afterwards saw the defendant. He told him his "teeth were shaky," and the defendant, after examining his mouth, said he would do what was required for 10s. 6d. Mr. Matland said he would consider the matter, and after he had had the boy's teeth looked at and received the defendant's advice, Mr. Matland asked to have a cast of his mouth taken, and paid 2s. 6d. deposit. The defendant gave a receipt for the money, and also handed Mr. Matland a circular which read, "Mr. Richards, late with Mr. Goodman, surgeon dentist."

Mr. Pettiver admitted that the defendant was not registered as a dentist. He was a manufacturing dentist, and when persons called on him to have operations performed he took them to another dentist.

Mr. Baggallay said the Act was designed to protect the public as well as dental practitioners. The defendant had clearly by his documents represented himself to be a surgeon dentist, but he was admittedly not registered. He would be fined £5, and £1 10s. costs.

SUICIDE OF A FORMER LIVERPOOL DENTIST.

An inquest was held on January 7th, at Whitehaven, touching the death of Watson Bell Mann, aged thirty-three, surgeon dentist, formerly practising at Liverpool. It appeared that about twelve months ago, deceased came to Whitehaven with his wife and three children. He had been drinking, and on Monday night took a dose of chloroform and carbolic acid, and died within an hour. The chloroform

and carbolic acid bottles he left standing with their stoppers out on the bedroom table.—A verdict of “Suicide whilst temporarily insane” was returned.

BIRMINGHAM BANKRUPTCY COURT.

Re Abraham Berlyn, dentist, 78, Gough Road ; Bennett's Hill ; 79, Summer Hill Road ; and Stratford-on-Avon.—Adjourned public examination.—Mr. Sharp pointed out that in this case the receiving order was made as long ago as August last, and bankrupt had been called upon no fewer than four times to file accounts. The case was one requiring the most minute inquiry, yet the accounts had not been filed. Mr. Coulton, jun., who appeared for the bankrupt, said his client had no wish to avoid passing his accounts or appearing before the Registrar. Unfortunately he had in the first instance employed professional assistance, which was ineffectual. Accounts were filed, but the Official Receiver rejected them. Since then bankrupt had obtained other assistance, and the accounts were now in course of preparation. The examination was adjourned till February 5 for the accounts to be filed.

The Birmingham Gazette.

GIGANTIC TOOTHACHE POSSIBILITIES.

The tooth of a mastodon, in an almost complete state of preservation, has been recently unearthed. The mastodon must have been sixteen feet high and thirty feet long, and, if a male, its tusks must have been from eleven to twelve feet long, and from the appearance of the tooth an extremely old animal, probably 150 years of age. The tooth weighed 14lbs. 12oz., and measured ten inches by six, and is of the purest ivory. It was worn down to the quick with the nerve exposed, and a naturalist to whom it was given was of opinion that the animal must have suffered untold agony for years from toothache.

APPOINTMENT.

Mr. A. Hopewell Smith, L.R.C.P., M.R.C.S., L.D.S.Eng. has been appointed Lecturer on Dental Surgery at the National Dental Hospital.

VACANCY.

National Dental Hospital, Great Portland Street. The post of House Surgeon is vacant. Applications to be made before the 7th inst. to the Secretary.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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British Journal of Dental Science.

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ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 118.)

TUMOURS OF THE MANDIBLE.

Tumours of the mandible bear a close general resemblance to those of the maxilla. The same tumours affect both bones, although not with the same relative frequency. The absence of a large central cavity in the mandible, and its isolation from the other bones of the face and skull, render the diagnosis and treatment of its morbid growths simpler than in the case of the maxilla. Were it not for the fact that teeth are implanted in this bone, and that a large portion of its surface is covered by the mucous membrane of the mouth, the tumours of the mandible would be almost identical with those of other bones. The different varieties of epulis and of odontome affecting the mandible have already been described.

FIBROMA.

There are two varieties of fibroma affecting the mandible, viz., the endosteal or central, and the periosteal or peripheral.

Central fibroma. The tumour consists of a hard dense mass of fibrous tissue ; it is most commonly found on one lateral half of the jaw, only rarely at the symphysis ; it may occupy the dental canal. As it grows it expands the bone over it, the outer plate yielding more than the inner. Different views have been held to explain the origin of central fibromata. According to Virchow, they originate from the periosteum of the alveoli, and differ in no way from fibromata of other parts. Heath regards them as being of inflammatory origin ; he thinks that plastic lymph exuded between the plates of the jaw, as the result of dental irritation, may become organized into fibrous tissue, and by continuing to grow form a distinct fibrous tumour. Broca and Bland Sutton regard the majority of these tumours as being fibrous odontomes.

The clinical characters are those of an innocent tumour. The rate of growth is slow, the tumour is hard and smooth, not fixed to the overlying parts, although firmly embedded in the substance of the bone and expanding its plates. There is usually little or no pain and no affection of the general health, unless the tumour has been inflamed or ulcerated from the injudicious use of local applications. Under such circumstances the tumour may rapidly assume enormous dimensions, and may lead to a fatal result by sloughing or by interfering with respiration or deglutition.

The treatment consists in removing the whole tumour with as little of the bony substance of the jaw as possible. Small tumours may be scraped out with a gouge from within the mouth. Larger tumours necessitate an external incision. It is very seldom that the tumour is so large as to necessitate removal of the jaw as well as the tumour.

Peripheral fibromata grow from the periosteum of the bone and usually present upon the gum being identical with the "fibrous epulis" already described.

ENCHONDROMA.

Enchondromata, like fibromata may be of central or peripheral origin. They are composed of nodules of cartilage bound up by intersecting fibrous bands. Clinically the central enchondromata closely resemble fibromata, but they are much rarer tumours. The periosteal chondroma is very rarely a pure cartilaginous tumour, it is nearly always a spindle-celled sarcoma of low degree of malignancy in which extensive chondrification has taken place; it therefore not uncommonly occurs after removal.

The treatment is the same as that of fibromata so long as the tumour is perfectly innocent, but should the clinical history or microscopic examination prove the admixture of sarcomatous elements, it will be wise to remove not only the tumour, but a surrounding area of healthy bone as well.

OSTEOMA.

There are two varieties of osteoma of the mandible, the cancellous and the ivory.

The cancellous osteoma may be the result of ossification of an enchondroma, in which case it forms a distinctly circum-

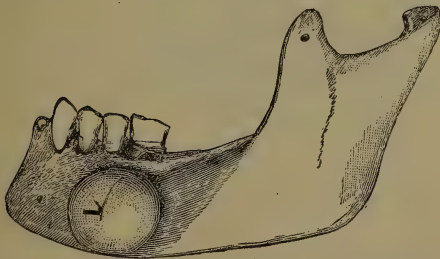


Fig. 42.—Ivory exostosis of Mandible. The bristle is in the mental foramen.

scribed tumour lodged in the interior of the bone. As in the case of the maxilla so in the mandible, tumours have been described as osteomata which were really examples of leontiasis, hard odontomes or ossifying sarcomata.

The ivory exotosis grows from the surface of the bone most commonly near the angle. The tumour depicted in Fig. 42 was removed during life from the mandible of a young woman. For the purposes of illustration it has been mounted on a dried mandible and sketched *in situ*. It grew from the immediate neighbourhood of the mental foramen, and was perforated by the mental nerve. It was composed entirely of compact tissue.

The treatment consists in removal. Cancellous osteomata may be gouged away; ivory exostosis should be sawn off flush with the surface of the jaw.

SARCOMA.

Sarcoma of the mandible may be central or peripheral.

Central Sarcomata may arise in the follicles of developing teeth especially the first molar, (Fig. 43). They may also

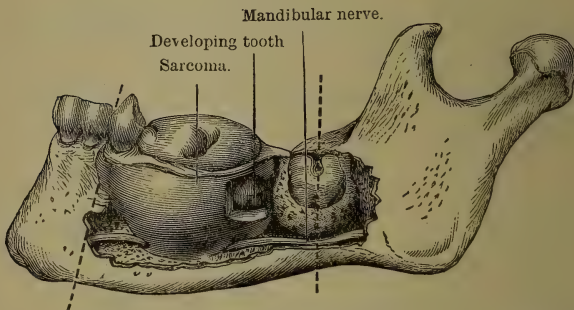


Fig. 43. — Sarcoma of a tooth follicle. The dotted lines show the amount of bone removed. (*Bland Sutton*).

be of the usual myeloid or round-celled varieties so often met with in other bones. Myeloid sarcomata are not so common as they were formerly supposed to be, cases of fibrous odontome and follicular sarcoma having been included under this class. They present the same naked-eye and microscopic appearance as myeloid sarcomata of the long bones. Clinically they are malignant tumours, but their malignancy is

not great. They occur mostly in young subjects, grow rather slowly and expand the bone evenly. A myeloid sarcoma growing from the interior of the alveolar border may project on the gum forming the myeloid epulis already described.

Round-celled sarcoma is much more malignant than the myeloid. When growing from the interior of the bone it causes rapid expansion and absorption of the plates of compact tissue, so that in a few weeks or months the tumour may fungate into the mouth or on the face. On section it presents a soft granular yellowish surface traversed by narrow bands of fibrous tissue dividing it into indistinct lobules. It nearly always recurs very rapidly after removal.

Periosteal Sarcomata may be spindle-celled or round-celled in structure.

Spindle-celled sarcoma is one of the commonest tumours of the mandible. It usually begins as a small swelling on the gum; as it grows the teeth become displaced and loosened from their sockets, and the tumour assumes a lobulated or tuberculated appearance, and varies in colour from a light pink to a dark purple. If the tumour is allowed to grow unchecked it may assume very formidable dimensions, forcing the mandible downwards and pushing the tongue backwards towards the pharynx causing death by dyspnoea or starvation. The rapidity of growth and the malignancy of this tumour varies a good deal, and depends to a large extent upon its microscopic structure; in some cases the spindle-shaped sarcomatous cells become converted almost entirely into fibrous tissue cartilage or bone, the degree of malignancy being low in proportion to the amount of fully formed connective tissue; in others the spindle cells retain their embryonic characters, and may be mixed with oval or round celled, such tumours being much more malignant than those in which chondrification or ossification has taken place.

Round-celled sarcoma may grow from the periosteum as well as from the interior of the bone. It is very malignant. Its clinical characters are practically identical with those of the central round-celled sarcoma already described. Chondrification and ossification may take place to some extent, but the tumour is always very malignant.

Sarcomata of the mandible demand thorough removal. In every case the whole growth must be removed, and in most of them a surrounding area of healthy bone must be removed as well. The freedom of removal must be determined by the rapidity of growth, the structure of the tumour (if known) and its position with respect to the bone; it is well known that central sarcomata are less malignant, and therefore require a smaller operation than those of peripheral or periosteal origin.

EPITHELIOMA.

Epithelioma of the mandible presents the same general characters as epithelioma of the maxilla. The disease nearly

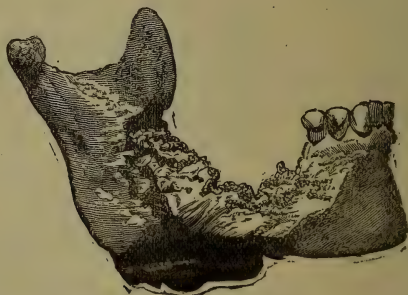


Fig. 44.—Epithelioma of Mandible secondary to Epithelioma of Gum. (*Museum Royal Free Hospital*).

always starts in the gum and erodes the jaw secondarily, (Fig. 44), but it sometimes happens that an epithelioma growing in the lower lip, tongue, cheek, or submaxillary lymphatic glands may extend to and involve the mandible.

Although the disease usually shows itself as an ulcer, in some cases a distinct tumour is formed, this is particularly the case when recurrence has taken place after the removal of the primary growth.

Early and complete removal is the only treatment that holds out any prospect of success. Under the name "columnar epithelioma" authors have described the tumour now known to be a form of odontome (the epithelial odontome). This tumour has nothing in common with epithelioma, save that it consists largely of epithelial cells (see chapter on Odontomes).

Diagnosis of Tumours of the Mandible.

The diagnosis of tumours of the mandible is much easier than the diagnosis of tumours of the maxilla. In the first place it is important to bear in mind the possibility of the tumour in question being some form of odontome, and to remember how rarely these tumours are correctly diagnosed before they have been subjected to operation. Again, it is not always easy or possible to decide whether a tumour occupying the interior of the bone is solid or fluid, and in such cases we must adhere to the rule to cut into the tumour before proceeding to cut it out. With regard to tumours which are without doubt solid, it may be stated generally that those which are of slow growth, hard, and isolated, are innocent in nature, whereas those of rapid growth, soft consistency, ill-defined outline, or having a tendency to fungate or to affect the lymphatic glands, are almost certainly malignant.

Treatment of Tumours of the Mandible.

The treatment of tumours of the mandible is attended with far greater success than that of the tumours of the maxilla. This is chiefly due to the fact that the mandible is compara-

tively isolated from surrounding parts, and the surgeon is therefore better able to eradicate the disease thoroughly. Moreover, the shock following operations on the bone is comparatively slight.

Small tumours especially when innocent in nature may be cut away with bone forceps, or enucleated with chisel and gouge without making any external incision; for these operations Wingrave's ingenious gag is particularly useful.

Larger tumours, or those of more malignant nature may require removal of a piece of the jaw in its complete depth and thickness. In such cases the remaining portions of bone should be kept in their relative positions by means of a steel knitting-needle inserted into the inferior dental canal, as recommended by Stanley Boyd. Hæmorrhage from the inferior dental artery may necessitate the use of Pacquelin's cautery, or the insertion of a small wooden plug into the canal.

Still larger or more malignant tumours can only be effectually removed by excision of one half of the jaw.

REMOVAL OF HALF OF THE MANDIBLE.

The patient is prepared in the same way as for removal of the maxilla. The surgeon, standing on the same side of the patient, makes an incision along the lower border of the jaw as far as the angle and continues it upwards to just below the lobule of the ear; if necessary the lower lip may be divided in the middle line; but the red margin should always be spared if possible. The extent of the incision will depend upon the size of the tumour and the necessity (owing to the vascularity of the tumour or the condition of the patient) of operating rapidly. The facial artery having been secured, the flap is turned upwards, the masseter being taken with it if sound, and the mouth opened by dividing the mucous membrane at its attachment to the alveolus. The lower



Fig. 45.—The lower line indicates the incision for removal of the Mandible. (*Heath*).



Fig. 46.—Removal of Mandible. The flap raised. The saw applied near the symphysis. (*Erichsen*.)

central incisor having been extracted, the bone is divided sufficiently to one side of the symphysis to preserve the attachment of the anterior belly of the digastric ; the division is commenced with the saw and completed with bone forceps. If the extent of the disease necessitates the removal of the genial tubercles, the tongue must be prevented from falling back upon the larynx by passing a piece of silk through its tip. The bone is then drawn outwards and the knife passed close along its inner side so as to divide the mylo-hyoid and internal pterygoid muscles, and the inferior dental vessels and nerve. The bone is then strongly depressed so as to bring into view the coronoid process and the insertion of the temporal muscle, the tendon of which is divided. If much



Fig. 47.—Removal of Mandible. Disarticulation of condyle. (*Erichsen.*)

difficulty is experienced at this stage owing to unusual length of the coronoid process, or to its hitching against the malar bone, it may be cut off with bone forceps, and after the removal of the jaw dragged down with sequestrum forceps and removed. After the coronoid process has been freed, the bone is still further depressed so as to bring the condyle into view, care being taken not to rotate it outwards

lest the internal maxillary artery be endangered. The fibres of the external pterygoid muscle are then partially torn through by the finger or director, and the joint opened in front by the careful use of the point of the knife. During this stage of the operation if the surgeon be hampered for want of space, the flap may be forcibly dragged upwards with a retractor; the incision should not be carried further upwards as it would necessitate dividing the greater part of the facial nerve. The lateral ligaments having been divided and the remaining fibres of the external pterygoid muscle torn through, the stylo-mandibular ligament is severed and the jaw comes away.

When the jaw has been much thinned by the disease it not unfrequently fractures when depressed to bring down the condyle; the upper fragment is then drawn upwards under the zygoma by the temporal muscle, and the difficulty of the operation is greatly enhanced. Under such circumstances the remaining piece of bone must be seized with lion forceps and dragged down.

All hæmorrhage having been arrested, the wound is carefully examined to see that no disease has been left behind. Any enlarged glands are removed. The flap is then brought into position and fixed with fishing-gut sutures, drainage being provided by inserting a tube in the direction of the glenoid cavity, and bringing the end of it out through the most dependent part of the wound. The latter is then dressed in the same way as after removal of the maxilla.

The gap left after removal of a portion of the mandible is to a large extent filled in by fibrous tissue, but no new bone is formed as the periosteum is always taken away with the tumour. In this respect there is a marked contrast to the extensive repair which ensues after loss of the mandible by necrosis.

To be continued.

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 126.)

Soldering on the Clasps.

Having cleared away the wax from the plate, borax should be painted on the joints, with a camel-hair pencil, or a thin slip of wood, such as a match made thin at the end. Now, as this is intended to encourage the solder to flow, and make a neat joint, care should be taken not to let it spread over any other part.

Small pieces of solder are next to be touched with borax, and then placed in position along the line of junction of the plate and clasps.

The case should now be placed directly over the flame of a Bunsen burner, and heated until the investment becomes nearly red hot; this treatment makes the case much easier to solder.

When using the blow-pipe it is always safer at first to have a large soft flame than a pointed one, heating the case throughout to nearly the melting point of the solder and then using a more pointed flame to flush around the joint.

When the soldering is completed, the case should be allowed to cool gradually, and then the investment is removed; by exercising this care one perhaps lessens the risk of any warpage or alteration in the fit of the plate.

The plate should now be placed in HCl if gold, or boiled out in H₂SO₄ if platinum or dental alloy.

The clasps should now be smoothed on the inner edge, next

the gum, with a fine file, so as not to scratch the teeth ; next fitted and filed to their proper size and shape, and finished, so that the artificial teeth may fit neatly against them.

Clasps against the teeth in the front of the mouth should be bevelled to a feather edge ; this not only renders them less conspicuous, but also allows the artificial tooth to fit close, and still further hides them from view.

When any soldering has to be done to the plate without investment, care should be taken to let the plate rest solidly on the coke or charcoal block used.

When soldering a case with clasps on, and where there is a chance of displacing any of them the precaution may be observed of coating the clasps and adjacent solder with whitening.

Another method of affording support to a clasp, etc., is to place a little ordinary casting sand or ground pumice on the coke or block, and so embed the case in it that it affords a support both for clasps and plate.

Each clasp should now be filed separately and adjusted to the model. Whitening painted on should always be used to protect a place where the solder is not required to flow.

It is particularly required to fill in between the edge of the back of a flat tooth and a clasp to prevent one being soldered to the other, and so destroy its usefulness.

If bands are correctly made, a case goes nearly home before it is tightened, and it can be readily taken out and replaced again ; wires, on the other hand, are often sprung over the points of the teeth, and the patient not being able to remove the case, the wires have caused decay, and sunk into the softened tooth, thus effectually preventing its removal, except by a dentist. Numerous instances have occurred where the author has had to remove such dentures, and the condition of the mouth has been bad in the extreme.

This brings us to a very important matter, and that is the

objection that is generally expressed, at any rate by patients in this country, at the presence of a gold clasp.

It is a strange anomaly that, no matter how many teeth are filled with gold, no particular objection is expressed, but the presence of a portion of a gold clasp immediately calls forth expressions of regret and a desire to have it taken away.

The slant of a tooth is often a serious obstacle to the effectiveness of a clasp, because the more it is tightened on the tooth the more it keeps the case from going into its place. Clasps should be made to act in conjunction with each other and also by themselves. As an illustration, take a molar clasp which encircles the case, tightening the same would constitute an independent hold ; the same may be said of a clasp around the second bicuspid, when the presence of gold on the buccal aspect of that tooth is not objected to. But where one has the six front natural teeth only in position, the clasps on each canine must act in conjunction with each other, and should encircle as much as possible of each tooth without unduly shewing in the front of mouth. If these clasps are made too short then the case is pushed out of its place instead of holding it when the clasps are tightened.

To illustrate this still further let us liken the canine teeth to two poles placed perpendicularly in the ground and up which we intend to climb by means of our hands alone. Now if we stretch our arms out, and can get a grip with our fingers, roughly speaking of two-thirds of their calibre, we can manage to get up them ; but, on the contrary, if our fingers only encircle the bare half of the poles, then we cannot get a grip, but slide away.

This then constitutes the difficulty with a case when we have to depend upon the two canines for support, because, although it is necessary for these clasps to come a little forward on the disto-labial aspect, yet they must be so nicely

adjusted and bevelled off, and the artificial teeth fitted up against and encircling them, so to speak, that the smallest possible amount of gold may only be visible, or the patient will object.

We shall in this chapter on gold work explain the method adopted for fitting tube teeth so as to conceal these clasps as much as possible.

The foregoing remarks are in reference to cases where there are no natural teeth posterior to the canines, in other cases, of course, the canine clasps may be shortened so that they only press against the distal aspects of the teeth.

For the construction of clasps the gold should be what is known as "hard," or "springy," made by alloying it with extra copper or a slight percentage of platinum. 16-carat is the quality generally used; the gold should be No. 7 or 8 guage, according to the size and length of the clasp. They should be tapered and thinned or bevelled to their free edges, and should be strongest and thickest where they are attached to the plate. Too much care cannot be taken in fitting clasps, for on them will depend in a great measure the comfort of the case and its stability.

It is not advisable to have a greater number than is necessary.

The most difficult cases to adjust clasps to are those where we have the loss of the two centrals in the upper, the remaining teeth being in position and also very short.

In such cases it may be found necessary to use fine wire clasps, acting one with the other on each lateral. This may be supplemented by wings or blades fitted between the first and second bicuspid.

(To be continued.)

British Journal of Dental Science.

LONDON, FEBRUARY 15, 1896.

COCAINE.

For some time past we have not been hearing so much about the value of Cocaine in Dental Surgery. Some, who complain that its anæsthetic effect is uncertain and not to be relied upon, have relinquished the use of this drug in extractions, although still finding it useful as an external application to the gums in some cases of crowning, scaling, or the application of a ligature. Others, doubtless, still continue to inject it instead of using Nitrous Oxide gas, but we have an idea that patients are now not quite so inquisitive as to its employment as formerly. "Don't you use cocaine?" was a frequent query a few years ago. Uncertainty in effect and the occasional occurrence of more or less alarming symptoms seem to have brought about a decline in the fashion of injecting cocaine into the gums. Even when used in other parts as a spray these troubles are not unknown, and perhaps its most useful sphere of employment is in the practice of the ophthalmic surgeon.

Two gentlemen have recently recorded in *The British Medical Journal*, some memoranda upon the use of Cocaine. Mr. G. H. Seagrave for the last four years has been in the habit of using hypodermic injections in lumbago, sciatica, pleurodynia, muscular rheumatism, and for neuralgia of the head and face. In the latter cases the injection is made into the arm, and its success can scarcely be due to local anæsthetic effect; the good results are attributed to a probable vaso-motor influence. Mr. Seagrave has found it act like a charm in many cases in which all other drugs, including morphia have failed. Dr. de Havilland Hall disapproves of the spray and uses a solution of 10 per cent. of resorcin with 20 per cent. of Cocaine. "The addition of

resorcin diminishes the toxic effect of cocaine, while at the same time it increases the anæsthetic effect of the latter, and it moreover prevents the cocaine crystallising out."

Another method of using Cocaine has been advocated by Dr. W. J. Morton, of New York. Guaiacol is used as a solvent for hydrochlorate of cocaine, and, according to the theory advanced, is caused to penetrate the tissues by cataphoresis induced by the electric current. Amongst dental cases so treated, we find some of sensitive dentine and of implantation. We have already called attention to the analgesic properties of Guaicol as narrated to the Academy of Medicine by Dr. Lucas-Champonière, and we have also published, as an Abstract, an account of pain after the insertion of a stopping being treated by the electric current. Dr. Morton's cases as reported in the *Dental Cosmos* are very suggestive, and there is also a description of the electrode recommended; it terminates in a chamber (for the reception of the medicines), the face of which is perforated and covered with a piece of blotting paper when in use.

UNREGISTERED DENTISTS.—Apparently desirous of striking whilst the iron was hot, the Secretary of the "Scottish Branch of the Unregistered Dental Practitioners' Association of Great Britain" wrote to a Glasgow newspaper about the recent prosecution. He thinks the public may trust the unregistered man because his position in relation to the law compels him to exercise the utmost caution in his treatment! Two statements in the letter are open to contradiction. "Payment of a fee of £2 is in many cases sufficient to secure to the aspirant after dental honours the position and privileges of a fully qualified dentist." Let any one who believes this try his fate with the General Medical Council. "Registration as it stands at present is absolutely no criterion as to the personal skill or experience of the practitioner, and affords no protection to the public." What do dental licentiates think of this after daily practice in a dental hospital for two years, and a subsequent test by a Royal College of Surgeons?

FORMALIN.—Experiments by Mosso and Paoletti show that as a bactericide Formalin is almost equal to Corrosive Sublimate and that its toxic properties are very much less. Small doses, however, if absorbed exert a powerful action on the nervous system with convulsions, and depression of temperature. When inhaled Formalin also seems to produce toxic effects. It renders proteids incoagulable and hinders the coagulation of albumen by heat.

OXIDATION OF AMALGAM ALLOYS.—Dr. Black, in his former experiments, came to the conclusion that there was some unknown influence which caused shrinkage and increased the amount of “flow” in amalgams. He has since investigated the effect produced by the length of time the alloy has been cut before being used. The differences noticed depend upon the slight oxidation which takes place by the exposure of the alloy to air at the ordinary temperature. Experiments showed that if an alloy shrunk when used in a fresh condition, there was still greater shrinkage in the fillings made after oxidation. The amount of mercury retained after squeezing the alloys also varies : a freshly cut alloy holds a larger percentage than when oxidised, but Dr. Black considers that mercury is not the element that causes shrinkage of amalgams.

SOLDER FOR ALUMINIUM.—Mr. Joseph Richards has read a paper before the Franklin Institute in which he details the results of his attempts to find a suitable solder for aluminium. Tin attaches itself by forming an alloy at the junction, but this alloy soon decomposes ; zinc also proves unsatisfactory, and the use of silver chloride which has been recommended as a flux for ordinary tin solder is not successful. The author recommends aluminium one part, a ten per cent. phosphor-tin one part, zinc eleven parts, and tin twenty-nine parts. The phosphorus seems to be an essential ingredient.

DEATH UNDER PENTAL.—Pental is, we suppose, the anæsthetic least used for dental operations. Mr. Constant

narrated some cases at the Odontological Society, but was understood to say that he had abandoned its employment. A fatal case, in which this drug was used to produce anæsthesia in a case of dental operation, is reported from the Chorlton-on-Medlock Dental Hospital. The patient was examined previous to operation by the anæsthetist of the hospital, and appeared to be in a fit condition. At the fifth extraction the respiration ceased, and all attempts to restore the patient were unsuccessful. The *Lancet* suggests further investigation of this fatal case would seem to be desirable.

THE NEW PHOTOGRAPHY.—At the Liverpool Physical Society, Dr. Lodge gave an interesting lecture and demonstration on Professor Röntgen's discovery. In conclusion the lecturer touched upon the three hypotheses of the nature of this light. (1) That the rays were particles of highly charged electrical matter. (2) That they were ultra-violet rays, high up in the pitch and about the size of atoms. Professors Fitzgerald, J. J. Thomson, and Schuster, the last of whom had lent photographs to Dr. Lodge received from Professor Röntgen, were all of this opinion. Possibly by [this means atoms could be photographed, and then the way in which the atoms are arranged in molecules would then be seen to the great joy of all chemists. (3) That they were longitudinal waves more like sound than light. Of these three hypotheses Dr. Lodge said that he personally inclined to the first.

EDINBURGH DENTAL STUDENTS' SOCIETY.—We understand that the twelfth Annual Dinner of this Society has been arranged for Thursday the 5th prox. The Windsor Hotel in Princes Street is the *rendezvous* and Mr. Ivison Macadam, F.R.S.E., the Lecturer on Chemistry in the Surgeon's Hall, will occupy the Chair. He is the honorary President-Elect. We presume the usual illustrated Menu card will be forthcoming.

Abstracts of British & Foreign Journals.

THE CLASSIFICATION OF SO-CALLED GREEN STAIN OF THE TEETH.

By Dr. W. C. BARRETT, Buffalo, N. Y.

For purposes of classification I shall make no distinction between the green, the blue, the black, the brown, or the red stain, or their intermediate shades. Clinically they are the same, and they have the same generic origin. If they are metallic in their source, the colour depends upon the metal whose compounds form the stain. If they are due to bacteria it depends upon the nature of the chromogenic organisms. Hence, no distinction will be made, except as indicating the origin of the discolouration.

Mineral Sources.—As one important factor, I will mention the metallic deposits that we frequently find upon the teeth—usually the incisors—of workers in copper, bronze, brass, iron, mercury, lead, nickel, and silver. This has all been pointed out by Miller and he also refers to the fact that trumpeters often show a discoloration brought about by the contact of the teeth with the brass mouth-piece of their instrument. The teeth of tailors, also, are often discoloured by the colouring matter of the cloth in which they work. Among 150 persons, workers in brass, bronze, and copper, for more than one year, whom Miller examined, he did not find a single individual who did not show more or less of green stain upon the upper teeth, and this in varying shades. I may say that I have myself examined about fifty such, with nearly the same result, the only exceptions being in persons who were fastidious in the care of their mouth, or whose teeth were incrustated in other deposits.

There are many animals whose teeth are covered by shining metallic deposits. These are chiefly or wholly among the graminivora. In some species the teeth of nearly every individual appear as if freshly gilded. In others they are quite black. Miller says he has found manganese deposits upon the teeth of the elephant, rhinoceros, dromedary, elk, deer, and cow. We all know that superficial discolouration is frequently found at the margins of amalgam fillings, and workers in mercury are liable to special deposits upon the

teeth. The very hair of copper workers becomes discoloured, and their teeth form no exception.

Fermentation of organic matter.—The white, cheesy deposit that is found about the necks of teeth, especially such as suffer from neglect, is apt in the course of fermentation which it undergoes, to become discoloured, or rather, to leave about the necks of the teeth a pigmentary deposit. This may arise from the mixture with it of mineral substances which are finally precipitated, or it may be the result of the chemical changes through which the matter passes. This cheesy deposit may have either an acid or an alkaline reaction, according to the character of the fermentation which is going on. If it be acid, the erosion of the teeth beneath it may be easily comprehended. We have but to reflect that the surface of the cervical portions of the tooth being thus superficially decalcified, if the character of the fermentation should change, and mineral or other pigmentary matter become a constituent of the deposit, it may be precipitated upon the eroded surface of the tooth, and thus give origin to a distinct stain.

Chromogenic Bacteria. It is well known to all observers that certain forms of micro-organisms produce a distinct colouring matter. Many of the microscopic fungi do this, and we find the most brilliant colours in the mushrooms, moulds, etc. Deposits about the teeth may become infected with these chromogenic or colour-producing bacteria, and thus the tissue will be stained yellow, red, or some other colour.

Sanguinary deposits.—I believe it to be the case that in some instances the discolouration of the teeth is due to deposits from the blood. Miller says that if in the presence of air or oxygen a current of sulphuretted hydrogen is brought in contact with fresh blood, sulphomethæmoglobin will be formed, which is greenish red in concentrated and green in dilute solutions. It is not probable that this will be a very important factor in the production of these coloured deposits, yet it will account for some instances.

Foreign Organic matter.—We all know that the teeth of tobacco users become deeply dyed in some instances. This is not usually confined to any special locality, but if when applied, as it usually is, alike to all portions of the tooth it stains, one may readily comprehend that other substances may be introduced into the mouth whose action will, because of limiting circumstances, or through non-liability of some of the tissues to their effects, cause a pigmentary deposit.

The Green-Stain of Childhood.—Thus far we have considered only the discolouration that may be found on the teeth of adults. It is evident that the same rules as to classification cannot obtain in the case of children. We must eliminate the metallic causes and search for other origins. Sufficient still remains in the action of ferments. There is not the same diversity in the colour of the pigments, and this leads to the conclusion that there are fewer causes to classify. At first thought we might imagine that the enamel cuticle plays an important part in the green stain of childhood, but it has been shown that it has appeared upon the surface of phosphate fillings in the deciduous teeth. That it may be changed by the application of bleaching agents like peroxide of hydrogen would indicate that it is of organic origin, although it does not positively demonstrate it. There is a constant decomposition of food about the teeth, and bacteria are especially active in the oral cavities of children. The secretions of the mucous glands, that are somewhat specialised at the gum margins, are frequently degenerated, and, under the action of ferment organisms, decomposed, and this may cause a pigmentary deposit, which will naturally follow the festoon of the gums and give the crescentic appearance which the greenstain of childhood usually presents. It follows then that this form of discolouration should probably be classed with those which are of fermentive or bacterial origin.

Conclusions.—The chief point of interest to us, as dentists, arises from the question as to whether these stains are an etiological factor in pathological conditions. From what I have already said, it may be gathered that I have little faith in the pathological significance of greenstain, and that I hold the belief that we, as practitioners, need not trouble our heads about it, except to remove it by mechanical means. The erosion that is often found beneath it must have preceded its deposit, for it invariably ceases when there is a complete coating over the eroded places. It never penetrates beneath the enamel cuticle when that exists upon the tooth. It may be dissolved by chemical agents, and the most careful chemical analysis shows nothing in it that would be injurious. While it may be infected by bacteria, and while the stain may be the effects of micro-organisms, it cannot be shown to entirely consist of those organisms. Heide and Charpentier believed it to consist of leptothrix threads, but later observations show that this was a manifest error.

I cannot conceive of any further classification of the stains of the teeth than through the sources of the pigmentation, and these are so widely variant that, practically, they are numberless. I have enumerated some of the prominent ones, and leave the subject with you in the hope that further information may be elicited in the discussion of the subject.

The Dental Practitioner.

FURTHER EXPERIENCE WITH BALSAMO DEL DESETO.

By Dr. W. WHITE, Silver City, N. M.

After another year of added experience in the use of this in dental operations, I say that I could hardly do without it. The record is still unbroken ; I have never heard of a single case of recurrence of apical irritation after I have filled the roots with this material.

I believe the real secret of success with this material is:—

1. That it is soft and permanently remains soft, and that it will adhere to a damp surface. A root-canal is like a tube and is liable to change of calibre from thermal or other causes. When filled with a hard substance and such changes occur there must form a crack between the filling and canal-wall, or within the substance of the filling, thus allowing septic invasion ; but when such a canal is filled with balsamo, the substance of the filling gives without cracking when there is a change of calibre, and when you add its permanent antiseptic and local antiphlogistic qualities, and its entire compatibility with tissue of all kinds, there seems wanting nothing to be desired for these purposes. I have discarded the use of the barbed nerve extractor in cases of recently destroyed pulps. I take out the bulbous portion with engine-burs, and clean the bulbous half of the root-canal with the Brewer drill, purposely leaving the dead nerve undisturbed in the apical half. After three years' experience I have not known a single case to cause trouble ; the absolute immunity from all pain, soreness, neuralgia and abscess is certainly

remarkable in the light of my former experience in such cases. My usual practice is to fill roots and crowns permanently at the second sitting, or, where I use local anæsthetics, taking out the pulp, I fill permanently, root and crown at first sitting.

I have a record of one hundred and thirty-eight abscesses cured during the past year. With these cases I have used nothing as a germicide except oil of cinnamon, and have filled all roots with the balsamo. In forty-eight of these cases the roots and when amalgam was used, the crowns also, were permanently filled within thirty hours after treatment began. In seventy-one of these cases the roots were filled on the second or third day after treatment. Many of these latter might have been filled safely within twenty-four hours, but I either did not have time to attend to them or there was no necessity for haste. The only cases found that I did not feel safe in filling within forty-eight hours were those where the canal was so small that I had great difficulty in getting the germicide into the apical space, and those where the apex was necrosed.

I found three cases of abscess during the year that I could not cure,—they all occurred in the same mouth; they had fistulæ with apex necrosed, and a copious flow of thin white pus. I failed to cure a single abscess in this mouth by any method of treatment, even after amputating the necrosed pulp.

In none of the one hundred and thirty-eight cases treated and cured did I inject any medicament into the apical space, but allowed the cinnamon to reach that space by absorption. I made no attempt to remove the dead pulp from the apical third of the root canal. I dried the canal only so much as could be done with absorbent cotton. I used no escharotic to break up the pus-sac. I found blind abscesses far more amenable to treatment than fistulous abscesses. It was immaterial to me whether the pus was discharged or not. Of course, where the pus discharged through the canal, I would allow all to escape that way that would, and when the abscess had made an opening through the process, I would lance the gum, but made no further attempt to get rid of the pus. The theory is that it is not the pus cells that hinder the healing process, nor is it the dead bodies of the microbes, but it is the ptomaines, the excretions of the microbes, that cause the trouble. Therefore, if you use a germicide it kills the microbes and stops the excretion of ptomaines; and let that

germicide be one that does not poison human cells, but leaves them in healthy condition, so that they may perform their proper function; then the giant cells, the scavengers of the body, will quickly devour the pus-cells and the dead bodies of the microbes, and the leucocytes, the builders of the body, will quickly repair the breach. Oil of cinnamon is too strong a drug to use full strength in the apical space. Leaving part of the dead nerve in the canal, so far from being a detriment, is an absolute benefit, as it allows only minute quantities of the drug to seep into the apical space. Dentists have been taught so long that it is necessary to evacuate the pus and to break up the pus-sac with escharotics, necessary to clean the canal thoroughly of dead pulp, and to dry the canal, etc., that it is difficult to make them believe that all these processes are not only useless but detrimental. I have used the material long enough to observe that the dead roots of temporary teeth filled with balsamo del deserto seem to be absorbed the same as live roots are. I believe the giant-cells will absorb a dead root as rapidly as a live root if there be no microbic ptomaines present to hinder them from performing their functions.

I have been particularly interested in watching the results of using balsamo with amalgam in filling teeth. In looking at the material one cannot realize its practical benefits. I have gradually grown into its use until I now use it in all amalgam fillings. Balsamo is so attenuant that a very small quantity of it will completely permeate the amalgam and perfectly insulate the several particles of metal, so that such a filling is as poor a conductor of heat, cold, and electricity as cement or gutta-percha. I now use it in all cases of nearly exposed pulp where capping of gutta-percha or of cement was formerly employed.

In recapitulating its good qualities I will say, first, it is more compatible with tooth-structure than any other filling-material yet devised. When a tooth is decayed so that the pericementum is exposed, mix the amalgam with balsamo, and place it lightly against this tissue, and it will remain perfectly comfortable. Any material which can be thus used must be compatible with tooth-structure. 2. I believe it hermetically seals a cavity, which cannot be said of any other filling-material now in use, there being a stratum of balsamo next to the tooth that is soft and remains soft. 3. Fillings will require less undercutting than with amalgam alone; in fact, they adhere to the walls of the cavity as firmly as

cement. 4. When balsamo is mixed with amalgam it causes the filling to be as poor a conductor of heat, cold, and electricity as a cement filling, and is impermeable to the fluids of the mouth. 5. The tooth-edge does not crumble as it does with amalgam alone. I think this is due to its entire compatibility. 6. The filling does not blacken the tooth as amalgam fillings do, balsamo keeping the filling from oxidizing. While it is thought these salts have a preserving effect, still they are not necessary where balsamo is used. 7. It is especially useful in filling temporary teeth where it is necessary to insert fillings quickly, and often without thorough preparation of the cavity. 8. Patients never complain of uneasiness or pain from thermal changes when sensitive teeth are filled with this material. In short, I believe this filling combines all the good qualities of amalgam, gutta-percha, and cement, and has a number of good qualities that none of possesses.

When I wish to fill over exposed pericementum, or where the pulp is nearly exposed, I mix balsamo with part of the amalgam and press it down lightly with spunk folded tightly in the pliers, finishing the filling with pure amalgam. For ordinary cavities I cover the cavity first with balsamo and work the amalgam into this; this forms a pasty mass; when the cavity is half-full I wipe off the surplus balsamo with spunk, firmly rubbing it against the walls of the cavity, then complete the filling with purer amalgam. When balsamo is mixed with amalgam it at first forms an unsightly mass, resembling blue mass in appearance, and shows dark through thin enamel, but after it has been in a tooth a few weeks or months it loses this dark colour and fillings look far better than if amalgam alone were used. Spunk moistened with alcohol used on the amalgam makes a clean, hard surface to these fillings. The reason I think balsamo preferable to the various alcoholic or chloroform solutions of the gums now in use for lining cavities is that these solutions become hard on exposure to air and moisture. When lining a cavity, if the calibre of the cavity changes, these linings crack and thus allow the invasion of septic matter; balsamo will permanently retain its present consistency and cannot crack,—it is also more compatible with the tooth than these gum solutions. Among other things for which I find balsamo useful is, first, to relieve pain in the alveolus after tooth extraction, especially where no firm blood clot is formed. A plug of cotton

saturated with balsamo put into the socket will keep it free from pain until thrown off by granulation.

2. When an exposed pulp is painful and congested, the pain is relieved and the circulation is restored to its normal condition by an application of balsamo. The relief from pain is caused by antiphlogistic properties and not by anæsthetic properties. I have thus often relieved the pain caused by arsenical application.

Until lately I thought balsamo a vegetable product, but I have discovered it to be an animal product; an insect uses this material to rear its young in the same way as bees use beeswax.

International Dental Journal.

The faulty conditions in our schools are a result of the advancing demands of the higher civilization of the age. The number demanding education exceeds the financial ability of the communities to handle them properly, and so they are crowded together without sufficient space or ventilation, and crammed with lessons, that they may be the sooner educated and get through with their studies, to make room for those who are clamouring for their places. As teachers, as physicians, as citizens, we should make every effort to correct these faults; we should insist on properly lighted and well ventilated schoolrooms: and one other important point we should insist on—breathing spaces, such as spacious playgrounds near the school. The effect of the deprivation of these things is recorded on the teeth of our patients, and as dentists we have a right to be heard in the matter.

W. X. Sudduth.

THE WORK OF THE PASTEUR INSTITUTE.—The report of the work done at the Institute Pasteur, Paris, during the third quarter of the past year shows that 382 persons were under treatment in July, August, and September, of whom 360 were French, and 22 foreigners. Fifteen individuals had been bitten by animals experimentally proved to be mad, and 137 by animals only suspected of being so. It is alleged that a boy under treatment at the Jassy branch actually recovered from an attack of hydrophobia, but this statement will probably be accepted with reserve.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary monthly meeting, December 2, 1895. Mr. David Hepburn, L.D.S. Eng., President, in the chair.

The Minutes of the previous meeting were read and confirmed.

The following nomination is before the Council :—Harold Dewe Matthews, L.D.S. Eng., Grove Field Villa, Cheltenham (non-resident).

The following gentlemen were proposed as resident members of the Society :—Frederick Lawson Dodd, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., 41, Wimpole Street, Cavendish Square, W.; Walter S. Nowell, M.A. Cantab., L.D.S. Eng., 41, Wimpole Street, Cavendish Square, W.

The following gentlemen were proposed as non-resident members of the Society :—Ernest Catt, L.D.S.I., D.D.S. Mich., 11, Valley Bridge, Scarborough; William Fergus Cornelius, L.D.S. Eng., 29, Orchard Gardens, Teignmouth; Edmund Lewis Dudley, L.D.S. Eng., 14, The Circus, Bath.

The following gentlemen having signed the obligation book were admitted members of the Society by the President :—Messrs. Francis R. Flintan, Frank C. Porter, James Sim Wallace.

The following gentleman having signed the necessary obligation form was admitted a member of the Society :—A. W. W. Hoffmann.

The LIBRARIAN announced the following donations to the library :—"The Diseases of Children's Teeth—their Prevention and Treatment," by R. Denison Pedley, presented by the author; "The Common Crow of the United States," by W. B. Barrows and E. A. Schwarz; and the purchase of Richardson's "Practical Treatise on Mechanical Dentistry," fourth edition.

The PRESIDENT said Mr. Todd, of Brighton, had presented to the Museum a portrait of M. Dechément, the inventor of mineral teeth. He, the President, was interested in the picture and also amused at the rather flowery verse in French which appeared underneath. In looking over his library to see if he could find any works by the author, whose name

was of course well known, he had found a book containing a portrait which was identical with that of the picture.

CASUAL COMMUNICATIONS.

Mr. CHARTERS WHITE said a short time ago in the Transactions of the Society a request was made for specimens of old bone work for presentation to the Museum. He had had one set in his possession about fifty years, and another about thirty, and he should be very happy to present them.

The first was a set worn by Turner, the artist, and gave a very good idea of the way in which they made teeth in those days. Turner was a very economical man, in dental matters especially—the race was not extinct now—and having lost four teeth in the centre he sent to the dentist whom he employed for a piece of what was called in those days “granulus,” the soft part of an old cow’s tooth. He fitted it in himself, and filed it up roughly, so that it really showed some of Turner’s own work. He thought it might be interesting for the Museum. The other set showed an example of natural teeth inserted into bone. It belonged to a roaring old Irishman, named Dr. Clark, whose appearance with these teeth reminded one of a gorilla. The lower part of the face was very prominent, and these teeth did not add to his beauty. It was a specimen of the way in which natural teeth were inserted in bone at that period.

Another specimen showed what was considered a very handsome set from a carved hippopotamus tooth. The patient in that case would not have them carved up in the proper way with molars, incisors, and canines, but he wanted double teeth all round, and it would be seen how difficult it was to make them articulate. Afterwards he had another set made, and as he (Mr. Charters White) did not care for the carving of hippopotamus teeth he made him a vulcanite plate; but that would not do unless he inserted in the front three rows of flat mineral teeth, which gave the gentleman great satisfaction.

The PRESIDENT said they were very much indebted to Mr. Charters White for his very valuable additions to the Museum. As time went on such specimens became rarer and rarer, and he hoped that any of their members who might have specimens would send them to the Museum, where they would always find a home.

Mr. H. L. ALBERT presented a model illustrating the case

of a young man, aged about 25, who, when 12 years old, fell out of bed and completely displaced an upper central. He was taken to a dentist the next morning, some eight hours afterwards, and the dentist replaced the tooth after filling the root with gold. Being taken home in a hansom the tooth was jolted out; he was taken back to the dentist, who replaced it, and used ligatures to retain it in position. The tooth did very well but never grew. For fourteen years the young man retained it in his mouth, and about a month ago brought the crown of the tooth, which was a mere cap of enamel, all the dentine being absorbed. An interesting point about the case was to know how the dentine was absorbed. In the centre, occupying what was normally the root canal, there were some fair-sized granulations, and the patient said that one or two loose pieces of soft gold had come out. He was inclined to ask the question whether it was possible that chronic periostitis had resulted in granulation tissue finding its way into the pulp canal, thus absorbing the dentine, or whether the root had become absorbed. He did not think the root had become absorbed; in fact, on looking at the crown of the tooth there were evident signs of fracture.

The PRESIDENT said the case was a very interesting one, especially as to the arrest of development which had taken place. In a case which came under his own notice a child met with an accident by which two of the incisors, a lateral and central, were knocked out. They remained out of the head some thirty-six hours and were replaced by the dentist, and retained by the regulation plate she was wearing at the time. He had the opportunity of seeing that child some four or five years after the accident, and the distinct arrest in the progress of the dead teeth was very peculiar. The other teeth had grown and assumed a normal articulation with the lower incisors, but the teeth which were replanted had been quite arrested in their development. Whether absorption of roots had taken place he could not say, because they were still firm.

Mr. W. B. PATERSON said some specimens of teeth, prepared by John Hunter, would be found in the College of Surgeons Museum, in which vertical sections had been made through the cone; and in the root, they would see growing up cockscomb tissue. Mr. Albert had asked whether granulations might not have grown up into the root of the tooth. Probably they had, it being very similar to the specimen to be seen in the College of Surgeons Museum.

Mr. E. LLOYD-WILLIAMS thought there could be no doubt of the fact that granulation tissue did grow up into the canal. He had a specimen in his own possession showing this distinctly.

Mr. HUMBY thought there was another explanation ; that sometimes where gold was inserted in a root, absorption would take place of the root tissue leaving the gold projecting from the end of the root as a point, and producing irritation.

Mr. ALBERT said he could only imagine that the granulations found their way into the apical foramen, for the obvious reason that there was a hole there. There were evident signs of fracture. Moreover, it was broken simply by the muscular action of the lip, not fractured in biting.

The Foreign Secretary then read a communication sent by Dr. Miller, of Berlin.

THE TRANSPARENT ZONE IN DECAY OF THE TEETH.

By W. D. MILLER.

At the ordinary monthly meeting of the Odontological Society of Great Britain, held May 6, 1865, Mr. F. J. Bennett presented the results of investigations concerning the nature of the transparent zone occurring in connection with caries of the teeth, which, in his opinion, seemed to justify the conclusion that this appearance is due to nothing more than a partial decalcification of the dentine. Mr. Bennett bases his conclusion upon the fact that enlarged and thickened tubes might be demonstrated in the transparent parts. This result is diametrically opposed to that obtained by Walkhoff, who has spent a great deal of time in the microscopic examination of transparent dentine, and has invariably found a diminution in the diameter of the fibrils as well as in the calibre of the tubes.

Likewise Wellauer speaks of cases in which there is a contraction of the lumen of the tubuli, as well as of the fibrils, while, according to Baume, the contraction goes so far as to bring about a complete obliteration of the tubuli.

We are able to account for this marked difference in the results, on the supposition that in reality, in one case of transparency we may have expansion, and in another contraction of the tubules ; or, that the material examined by Mr. Bennett was different from that used by others ; or, that, finally, the results obtained by examination under high powers of the microscope may sometimes be misleading on

account of the various refractive powers of the walls of the tubules in different conditions.

It is not my intention, however, to approach the subject at the present time by the aid of the microscope, but rather to bring up some other points, which appear to me to be well worth considering :—

(1) If the transparent zone in dentine is nothing more than a partial decalcification which occurs alike in living and in dead teeth, then it should, apparently, be a very simple matter to reproduce it artificially ; up to the present, however, no one has succeeded in doing so.

(2) Where decalcification of the dentine takes place, as in caries, the process advances in a fairly regular line so that if we remove the softened dentine from a cavity of decay, we have a smooth, regular, concave surface. We sometimes find, it is true, the margin between the decalcified and the hard dentine irregular and jagged, but scarcely I think, to such an extent as the inner border of the transparent zone. And in particular do we never find narrow bands or spurs of decalcified dentine extending quite to the pulp chamber, as we see them in the transparent zone.

(3) Where acid acts upon the dentine at any point, as in a fissure, we find the decalcification extending laterally as well as in the direction of the dentinal tubules, and, in fact, almost, if not quite, as rapidly in the former as in the latter direction. Should we not therefore expect to find the transparent zone, if due only to decalcification, on the lateral margins as well as toward the pulp chamber ? As a matter of fact, in the great majority of the sections which I have recently examined, where the transparent zone is due to caries alone, I do not find it appreciably broader than the broadest diameter of the decalcified territory, and I think we may say that, as a rule, the transparent zone is wanting on the lateral margins.

The points referred to under 2 and 3, I consider to be of minor importance, yet still deserving of notice.

(4) I have already, in another place, given expression to the conviction that the transparent zone does not form in dead teeth ; this conclusion is based upon the examination of a large number of teeth, which had been worn on plates in the mouth. At that time I simply split the teeth and noted the appearance to the naked eye. I have recently ground sections from about a dozen different teeth worn on the plates,

and send some of them for your inspection I found no transparent zone in the specimens which I examined. At least I doubt if the appearances presented by the cuts can be called analagous to those seen in caries of living teeth. I think we should, moreover, bear in mind that the presence of a slight transparency in preparations from dead teeth does not furnish evidence of the non-vital origin of the same, since the transparency may have been present at the time the teeth were put on the plate or pivot. We know that a microscopic defect of the enamel surface, scarcely visible to the naked eye, may be the cause of extensive transparency of the dentine. These teeth sometimes show a slight diffuse transparency, extending over a large area of the section but having no connection with caries or any other apparent pathological process. I think that this, however, may readily be distinguished from the transparency which we are at present considering. One specimen shows two parallel stripes of transparent dentine, one just beneath the enamel border, and the other separated from it by a dark zone about 1 mm. in width. These are appearances with which we are all familiar, and which in my estimation result neither from vital action nor decalcification. In the cut just referred to, the inter-globular spaces are evidently the cause of the zone appearing double. I am inclined to believe that diffuse transparency may be only the result of a slight difference in structure, causing a difference in the permeability of the dentine, or of differences in thickness, &c.

It may be of interest to note in passing, that the majority of the teeth examined show penetration of the dentine by the fungus which I described in 1882* as *Saccharomyces mycoderma*, and which has subsequently been noticed by Galippe, Gorbard, Rudas, Tomes, Mummery, &c.

(5) We find typical cases of transparent dentine in places where the action of acids from without appears to be entirely excluded. Leaving the transparency of the roots of senile teeth out of account, we find transparency in cases where the enamel of the cusps has been worn down, even though the dentine may not be exposed thereby, and no trace of caries present. I have seen a well-marked case of transparency in a molar, in which the enamel of the approximal surface had been slightly worn away by friction against its neighbour. I send some specimens for your inspection in which there is

* "Archiv. fur experimental Pathologie," Bd. xvi.

pronounced transparency of the dentine extending quite to the pulp, with nothing whatever to account for it except the irritation caused by a crack in the enamel.

(6) Chemical analysis does not give results which are consistent with the theory of decalcification. Some years ago I made an analysis myself, and had another made by a Berlin chemist, Dr. Jeserich. Teeth were chosen in which there was but a superficial defect in the enamel, split through the defect and the pulp chamber, so as to expose the transparent cone of dentine. The latter was burred out with a very fine round burr, avoiding the parts next to the enamel margin, where there was any indication of decalcification. The powder was treated with a magnet in order to remove any possible particle of iron, dried at 102-105° C. and the ashes determined. My analysis gave 71.9 per cent. ashes, while normal dentine from the same teeth gave 72.1 per cent., a difference quite within the limits of the errors of experiment. The analysis of Dr. Jeserich gave for transparent dentine 69.5 per cent., for normal dentine from the same teeth 68 per cent. These results do not indicate any decalcification. The material was, in each case, obtained from about twenty teeth.

(7) The action of colouring matters upon transparent dentine is not what we should expect if a partial decalcification were present. It is well known that sound dentine does not readily stain with most of the dyes commonly in use, such as carmine, eosine, &c., partially decalcified dentine, on the other hand, takes on stains very readily. I have found an aqueous solution of eosine a valuable means of diagnosing the presence of slight decalcifications. If a drop of strong mineral acid (nitric, hydrochloric) acts upon ivory for a single second, a subsequent application of the eosine solution will immediately produce a bright red spot where the acid came in contact with the ivory. A minute drop of a 1 per cent. solution of acetic or lactic acid will bring about a sufficient decalcification in twenty seconds to cause a deeper staining with the eosine solution. So, too, we find carious dentine becoming deeply stained by eosine. If now transparent dentine represents a partial decalcification, should we not expect it also to stain more readily than normal dentine? This is, however, not the case; on the contrary, we find the transparent dentine even more difficult to stain than the normal.

In view of all these facts, some of which are of minor, others of vital, importance, I find it impossible, at present, to

accept the decalcification theory of the typical transparent zone found in caries and other pathological conditions of the teeth as illustrated in the cuts which I have sent.

There are still some phenomena connected with the transparent zone, to which I may call attention. We often find the zone of transparent dentine in beginning caries bordered on each side by opaque stripes, which, under the microscope, appear almost black, and within which the tubules are seen to be filled with irregular, angular granules or rod-shaped elements. These opaque zones we find almost constantly in some way associated with the transparent zones, usually separating the latter from the normal dentine or filling out the space between the transparent zone and the pulp.

In many cases we find the opaque zone where we might expect a transparent zone; a striking example of this in slide 17. In the wearing down of teeth by mastication I have found cases of transparency, more frequently, however, broad opaque zones, as in slide 18. The appearances are such as to give rise to the question whether the opaque zone may not be a forerunner of the transparent zone. Although the fact that we find transparency where there is but a slight abrasion of the enamel (photo 2) and opacity where it is completely worn away (slide 18) appears to point to the opposite sequence.

Photo 2 presents a phenomenon to which I wish to call particular attention. On the right may be seen a transparent cone, which has resulted from a defect in the enamel, caries from the centre of the grinding surface has encroached upon the transparent cone, and yet the latter seems to a slight extent at least, to have maintained its integrity, as indicated by its taking on the stain less readily than the adjacent parts.

These notes are by no means intended to give an exhaustive treatment of the subject; on the contrary, I must acknowledge that for myself the question appears more complicated and is further from a definite solution than I thought it to be some months or even years ago. My only excuse for presenting them at the present time is, that the other side of the question may be heard in connection with the communication of Mr. Bennett.

Mr. F. J. BENNETT said he wished to thank Mr. Mummery and also Dr. Miller for the privilege accorded to him of looking over the paper and examining the specimens before the meeting. He gathered from the paper that Dr. Miller objected to the proposition that the area of translucency was

due to "partial decalcification of the dentine and nothing more." That was not at all the position that he (Mr. Bennett) took up in his paper; from first to last there was not an allusion to "partial decalcification and nothing more." The fact was the term was used not by himself but by a subsequent speaker. His point was to disprove the vital theory, and to clear the ground of this difficult subject by first showing what it was not, that they might subsequently find out what it was. Dr. Miller said that hard ground sections of dentine presented the appearance recognised, because the tubes being filled with air had a certain index of refraction which differed from that of the intertubular tissues. Anything which would bring the refractive indices nearer together might produce translucency; this might occur in one of two ways—either by a decalcification, or by increased calcification. Dr. Miller said that in the zone of translucency a decalcification most assuredly did not take place, and added that this was sufficiently proved by chemical analysis. What was this chemical analysis? Dr. Miller stated that he took from twenty teeth the translucent areas and submitted these to chemical analysis. The ashes from the translucent areas came to 71.9 per cent., whereas ordinary dentine submitted to the same analysis yielded as ashes 72.1. Dr. Miller started to prove that there was increased calcification, and this was the result: 71.9 in the translucent zone—positively smaller than in the normal dentine, which was given as 72.1. He gave a second analysis made by a Berlin analytical chemist, who found that there was 69.5 in the translucent zone, and 68 in the ordinary dentine. Dr. Miller objected to this last analysis as too low, and doubtless it was so. It was quite evident, therefore, that Dr. Miller did not take this as a fair analysis, but relied upon his own, and he (Mr. Bennett) thought that Dr. Miller was convicted upon his own evidence. To return for one moment to the optical appearances. Assuming it was an increased calcification, imagining for a moment that the tubule instead of being filled with calcified matter was the reverse, they would expect the optical appearances of translucency to vanish instantly. One specimen in particular, accompanying Mr. Bennett's own paper, showed the typical pipe-stem appearance in the translucent zone, and obviously there, there could have been no calcified fibril. Did the appearance of translucency change? Not in the least; it was exactly the same. To jump from the calcified condition to an opposite one, *i.e.*, the pipe-stem enlargement, with-

out any change in the optical appearance of translucency, was most conclusive that there could not originally have been an increased calcification of the fibril. Dr. Miller found dark tubes also in the translucent area. That, he (Mr. Bennett) would quite admit, but in specimens which Dr. Miller had shown, following up the same tubes from the carious area down to the pulp, they found the translucent area, dark tubes, again translucent area, and then the pulp. What utility was served by this? By the dark tubes he meant that they were patent when dried, but occupied by a soft fibril in the fresh state. It was not conceivable that nature would calcify one little piece, leave a large margin uncalcified, and again set up calcification. No effective barrier would then be formed for the prevention of caries, and that was what was held by those who advocated the increased calcification theory. He would now pass on to the question of natural teeth mounted on plates. Dr. Miller had examined several specimens, and had sent two. He (Mr. Bennett) exhibited three specimens, each of which he claimed to show the translucent zone pretty clearly. With the permission of the President, he would hand round photographs of two of these specimens. In one it was almost incontestible that the translucent zone appeared in these teeth mounted on plates. It was admitted, of course, by the "vitalists," that if it could be proved that there was a zone connected with the caries, even in one specimen, the downfall of that theory was inevitable, for it was inconceivable that vital action could take place in a dead tooth. Dr. Miller had alluded to *saccharomyces mycoderma* as a micro-organism which permeated these dead teeth. He did not doubt it for a moment. He believed that teeth mounted on plates did not decay exactly as ordinary normal teeth did; it appeared to be rather a spreading and somewhat shallow decay. Quite possibly this *saccharomyces mycoderma* might arrest the caries to some extent, especially as Dr. Miller said his own experiments were now and then vitiated by such development, which arrested the artificial caries he was attempting to produce. That might modify these specimens and was not an unimportant point. Dr. Miller had mentioned a case in which there was transparency of the dentine, without anything to account for it but cracks in the enamel. He could quite conceive that to be so, but that did not prove that it was due to increased calcification. Again Dr. Miller alluded to the attrition of caps of enamel, and said that he got translucency in those

cases also. According to the specimens of attrition shown that evening, they also equally found, in some cases, black tubes which represented patency of the tube, and therefore that did not show that there was increased calcification even in attrition. He would refer to the very significant communication made recently by Mr. Tomes in which he actually found in teeth much worn down by attrition, not an increased calcification, but a result which, by chemical analysis, gave .5 per cent. less than normal—that is to say, 71.4 instead of 71.9, which was the normal percentage of lime salts. That was rather a staggerer for those who believed there was increased calcification in attrition. Coming now to the stains, Dr. Miller had used eosin, for, as had been explained, on applying lactic acid or acetic acid to normal dentine he found that a portion became stained after the part had become decalcified. He further mentioned that the translucent zone did not stain with eosin. That might be so in the generality of cases, but he should like to point out one rather contradictory fact which Dr. Miller in his candour had stated. In specimen No. 2 he actually pointed out the non-staining by eosin in a specimen in which translucency occurred, as he considered, in response to attrition; and a little way off caries had attacked that translucent zone, and although obviously it must have decalcified the zone, eosin did not effect a stain. That showed that eosin did not always stain the decalcified tissue. Dr. Miller had further alluded to the researches of Baume and other continental writers; for the opposite view he might have adduced Drs. Black, Wedl, Lieber, and Rottenstein, and many other investigators; but it was idle to quote one against the other. Points two and three, as to the shape of the spurs, and as to the translucent zone not taking the same contour as caries, were, as Dr. Miller admitted, minor points. It only remained for Mr. Bennett to thank the members for so patiently hearing him, and to express the hope that in anything he had said he had not gone beyond the retort courteous.

Mr. MUMMERY said he did not think Dr. Miller considered that this matter was in the least degree decided, but looked upon the cause of the translucent zone as still quite a matter of investigation. He thought that the evidence of decalcification was very weak indeed, and the evidences of calcification were not very strong; but the evidence *against* the theory of decalcification he thought was very strong. He thought Dr. Miller had misunderstood Mr. Bennett as saying

that the transparent zone was due to decalcification and that alone ; it probably arose from the discussion which took place afterwards. The dark zones were not at all understood. Cracks through the enamel were strong evidence that the zone was not due to decalcification, because there was no caries and no opportunity for any acid to get to the dentine. As to the stain, No. 2 showed plainly a red stain encroaching upon the transparent zone, and so far as softening had gone on the red stain appeared to have penetrated. With regard to the chemical analysis this was almost a case of hair splitting, the differences were so very slight. He had written to Dr. Miller on the subject and received this reply :—" When one makes a number of experiments relating to any subject he always takes the mean of the results obtained as being most probably nearest the truth. He never takes out one result which best suits his view and neglects the other. The gist of my argument in my present article, as well as in my book, is that these analyses prove non-decalcification and are compatible with the vital theory. I do not say that they prove the vital theory, but they agree with it, in contradistinction to the decalcification theory. Besides, taking only one of the analyses, a difference of .3 per cent. does not seem to prove that there has been a decalcification. The difference may be quite within the limit of an error in the experiment."

DISCUSSION ON MR. MATHESON'S PAPER.

Mr. ROBBINS said he thought it spoke well for the Society that they could have on the same evening a scientific paper such as they had had from Dr. Miller and the discussion which followed, and also a practical paper such as Mr. Matheson had read to them. It was a paper bristling with points having to do with their every day practice. He would refer to one or two ; and the first was the difference between hand pressure and malletting. He spoke as an operator of sixteen or seventeen years' standing, but he would rather speak as a patient of some considerable experience. He had in his mouth something like twenty-six fillings that were put in by one of the most thorough men he knew, and to whom he owed very much, but he could not ask honestly, and on humanitarian grounds, nineteen-twentieths of his patients to endure those beautiful little retaining points and the malleting directly upon the most tender part of the tooth, combined with the long sitting, notwithstanding the ultimate beautiful result. He thought if they could get a good durable filling

such as they knew Mr. Matheson's to be, by hand pressure, there was something to be said on that score. It was a question, after all, of thoroughness. There was one point not mentioned by Mr. Matheson which he would like to name, because he had spoken about it in another place, and it was somewhat smiled at—the question of using for the first third of the filling, when one did not wish to exaggerate contour, that most valuable material, matt gold; and where the tooth was of a very fragile nature even underlying that with oxy-phosphate, setting the matt gold in, like wooden blocks in a pavement. They could then with firm but gentle hand-pressure work down the surface and bring that up to within one-third of the finish. Then if they wished the edges to be absolutely right and used gold foil, the malleting would not be so very serious a matter, and they might have a cohesive filling inserted with but little discomfort to the patient. He agreed perfectly with Mr. Matheson, and everyone who knew that gentleman thoroughly would appreciate what he said, that there was as much value to the patient got out of a good honest amalgam put into a large cavity in the back of the mouth, and sometimes a little more, than in those extraordinary acrobatic performances that took so long, tiring both patient and operator; and if in the one case they had something to show, by the other method they would have something more solid and more comforting to the patient.

Mr. W. HERN said he must congratulate the reader on his very interesting paper. As had been said, it was bristling with practical points. The first point that struck him was the little device that had been brought forward of the wire for holding the rubber dam. He had seen the contrivance, but had not used it much because it got a little in the way. He thought the difficulty might be overcome by bending the wire somewhat in the shape of the lower jaw; the end would then lie back out of the way. The one point to which Mr. Matheson devoted a good deal of the paper was a defence of non-cohesive gold. There was a time when he thought that no good work could be done—at any rate, in contouring—with anything but cohesive gold, and he would go further, and say there was a time when he thought cohesive work done with hand-pressure was not at all equal to cohesive work done with the mallet. He had now come to the conclusion that very excellent work could be done with hand-pressure. In criticising the mallet the fact should be taken into consideration that it was frequently used with a

blow far out of proportion to the requirements. The cohesion did not depend so much on the blow as on going accurately over the whole surface, doing what the great master of the cohesive method used to call "bringing each piece of gold into the sphere of cohesion," that was to say, going very carefully over the whole surface rather than trusting to a heavy blow. That was one of the reasons why the mallet had been tabooed. He ventured to think that what ought to have been more criticised was the preparation of the cavity. The reader spoke of the method of malleting gold under overhanging edges but they knew that no cohesive gold, and not even soft gold, could be condensed under overhanging edges. His sympathies were entirely with Mr. Matheson with regard to the importance of contour. Contouring was the most important thing in their work. They told their patients that food was the cause of decay, and that no food should remain between the teeth. It came therefore to this, that if a flat stopping was put in where it ought to be contoured, the patient was sent away with a faulty operation from the very first, inasmuch as food was permitted to wedge down to the gum, to ferment and cause decay, or to interfere with the gum margin. He also agreed as to the value of collar crowns, which had a value beyond all other crowns, because they could be contoured in a way that could not be done with any other fixed crown, such as the Logan.

Mr. G. H. BADCOCK said the paper was full of practical suggestions, but he would confine himself to what the author said about tin and gold. He wished to endorse all that had been said on that head. He had used tin and gold in the way described for a good many years, and with more success than he had found resulting from any other filling material. If he were obliged to make his choice as to any one filling material, and to be deprived of all the rest, he should certainly choose tin and gold. He had used it chiefly in the way described, one sheet of No. 4 tin between two sheets of No. 4 gold, but lately he had been using No. 5 gold, simply with the object of improving the colour of the combination. He found in all cases that it worked very well and distinctly improved the colour of the filling. He was trying to get some No. 3 tin made to use with No. 4 gold, and so obtain the same result with more ease to himself. The value of the filling was extremely great in interstitial cavities in the bicusps, and even molars, where foil could be used. He had felt the unsatisfactoriness of amalgam in such cases, and

foil could be used easily, fairly rapidly, and very satisfactorily in this way, more so than in any other that he knew.

Mr. DENNISON PEDLEY said that the only thing he wished to call attention to with regard to the difference between malleting and hand pressure in gold, was that there were two very important factors to be considered—one the tooth, and the other the patient. A short time ago a young lady, aged 21, consulted his partner with regard to caries in her teeth. He found a great number of the teeth very carious. On carefully examining the mouth he came across a very beautiful gold filling. On asking her why with that good gold filling in her mouth she had allowed her teeth to remain without treatment so long, she said, "Well, my mother took me when I was 16 to one of the best dentists, and I had such a terrible time of it with the mallet that I vowed I would never have another tooth stopped." That might appear to be rather silly, but still they had to deal with facts as they were, and he always confined himself to filling teeth with hand pressure until he found out what sort of nerves his patient might have. He thought the combination of the two, filling first with hand pressure and finishing off with the mallet, was about the best method they could have, but practically they could not lay down any definite law on the subject.

Mr. BEADNELL GILL said he had been for many years a considerable practicer of mallet work, and must confess his great appreciation of it. He believed that an enormous amount of pain was inflicted unnecessarily by malleting work; but he thought that those men who still advocated the use of the mallet, could continue it with a considerable amount of success and saving of time to themselves and their patients by judicious management as to the direction of their blows. For one thing, they knew the great advantage of seizing the right time for filling the teeth. In illustration of this he mentioned a patient who, through illness, was unable to keep the original appointment, and had she come then he could have filled the tooth without a single tear. He had already filled six or eight of her teeth in exactly the same way and had no trouble whatever, but through her having to remain beyond the right time, after wedging he could not possibly, either by hand or by mallet, fill that tooth without producing the discomfort which he objected to inflict on his patients. He felt that if he had to distress his patients like that, much had been done to discount the good effect of the

best work that could possibly be put in. With regard to filling material, matt gold had been mentioned, and he thought that or crystal gold was a material well worthy of investigation. Those who knew him would smile, because they knew this was an old hobby of his. He had filled with crystal gold for over twenty years, and it was still his special favourite although he had tried every other kind of gold introduced from time to time. He believed that if a man was willing to adapt himself to circumstances and according to his material, he would find that in all round filling there was nothing better than crystal gold. It could be used either cohesive or non-cohesive, either by hand pressure or by malleting. He had fillings he could look back upon, done eighteen years ago with crystal gold, put into the most frail incisors of girls from 14 to 16 years of age, entirely by hand pressure, and they were standing good to this day. It showed that an enormous deal of good work could be done on these most frail of all teeth by hand pressure. At the same time others had been done with the mallet, and he could see absolutely no difference in the ultimate result after many years. It was merely a question of time, and he believed by judicious arrangement a man might save a patient perhaps a quarter of an hour's sitting, which was a consideration, by using the mallet, and yet do no harm by causing any unnecessary distress.

Mr. BALDWIN said with regard to the rubber dam holder, one advantage which had not been mentioned was that at least on one side the patient could easily breathe, and they knew that many patients could not breathe except through the mouth. He agreed with Mr. Matheson on almost every point of his paper except that he should not like to do away with the mallet altogether. Hand pressure was perhaps the more useful of the two, but the mallet had its own special uses, particularly in finishing off the filling. When a filling was of any size it would certainly produce a better continuous surface, taking a higher finish and therefore being less visible afterwards. It also did away with the great tendency of hand pressure instruments to slip, which was a serious thing both for the operator and the patient sometimes, especially when working with a mirror. The Woodhouse plugger, for instance, was liable to slip when the operator was working with the mirror, and was very likely to injure his face. He had known an instrument stick into the forehead of the operator, very near the eye, through slipping in this way.

Then, of course, the tearing of the rubber dam was also a serious question, which would be avoided altogether by malleting.

Mr. VANDERPANT asked what kind of mallet the author was in the habit of using, and whether he used the electric mallet. In his own small experience, he found very good results from the old fashioned hand mallet; it could be used with very great precision, and the force of the blow modified. No doubt that mallet had long been superseded, but there was still room left for it, and he strongly recommended members to give it a trial.

Mr. MATHESON, in reply, said with regard to the principal question that had been discussed—that of malleting and hand pressure—that as he did not use the mallet at all himself he could not be considered by any means a perfect judge of its value. He had rather wished to point out the merits, such as they were, of hand pressure rather than the demerits of malleting, and to emphasize the difference between what had been called judicious and injudicious malleting. He had perhaps, to some extent, exaggerated the merits of hand pressure, partly because that was the only kind of work he knew personally, and partly as a sort of counterblast to the exaggerations undoubtedly made in favour of malleting. He was very much indebted to Mr. Badcock for his suggestion as to a larger proportion of gold in making tin and gold fillings. The one great disadvantage of tin and gold fillings being their appearance, he should certainly, without delay, try the method that Mr. Badcock suggested. With regard to the wire dam holder, the movements of the wire, though troublesome at first, could be got over. He first saw it adopted by Mr. Fernald, of Cheltenham, and after using it in one or two cases he put it on one side. Some two or three years afterwards he saw a modification of it used, and after a little experience with it, he soon came to absolutely discard retractors. In the form in which he used it, it might be made to stand back against the face; it admitted of a certain amount of bending, so that, although they could never do away with the loose ends, they could get rid of them to a large extent.

The PRESIDENT having expressed the thanks of the Society to the various gentlemen who had contributed to the evening's discussion by Casual Communications and Papers, and especially to Dr. Miller and to Mr. Matheson, the Society adjourned till January 13.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The third ordinary meeting of the present session was held on the evening of Monday, January 13th, when Mr. H. P. Friend read a paper entitled "Miscellanea."

After the introductory remarks, "Cocaine used as a Local Anæsthetic by Interstitial Injection," claimed attention, the essayist stating he had seen it used constantly for something like six years, with little or no bad effects, advocating a quarter grain cocaine in 10 to 15 min. of water for a single tooth, while a half grain in 15 to 25 of water may be spread over the space of several teeth. Special emphasis was placed on the need of asepsis in needle and forceps, and that the drug be obtained in the tabloid form fresh from the manufacturers, and dissolved by boiling for a few seconds. In anæmia, acute or chronic respiratory affections, heart disease, pregnancy or periods of lactation, cocaine was contra-indicated, and olive oil sterilized by boiling wax substituted, the injection giving apparent success by producing a transitory anæmia of the parts.

Gold and Osteo Plastics elicited a recommendation to fill the cavity half way with fairly thin cement, and while still soft, well annealed gold cylinders sufficient to cover the white filling, are lightly condensed on its surface. This method is specially applicable where the pulp is nearly exposed, or where the dovetailing, or retaining points, are not altogether satisfactory.

The advantages to be gained by the "Immediate Insertion" of artificial teeth, after extraction, was well placed before the Society, in a most lucid explanation of the method, special attention being called to the too often neglected need of prescribing an antiseptic cooling mouth-wash.

Notes were read of a case specially interesting to dentists, and of most difficult diagnosis, treated in the Infirmary. Eventually the patient was found to suffer from a sarcoma confined between the two plates of the lower jaw, which was removed, from about an inch on the left side of the symphysis, to the angle of the jaw on the right side. (The patient now wears a vulcanite splint which preserves the contour of the face, and will to some extent modify the cicatricial contraction.)

Two models were shown of incisors, successfully regulated by Immediate Torsion. In one case the patient was nine years of age, and in the other nineteen.

A discussion followed, and Mr. J. Malcolm, L.D.S., the President, presided over a large attendance.

Dental News.

BIRMINGHAM DENTAL HOSPITAL.

The 36th annual meeting in connection with the Birmingham Dental Hospital was held last month at the Council House, under the presidency of the Mayor (Councillor James Smith).

The Surgical Committee reported that the work of the hospital during the last twelve months had largely increased. The policy of the Staff in reducing the number of operations under ether, by employing nitrous oxide wherever possible, had been carried out to a most satisfactory degree. The work for the preservation of the teeth showed a very gratifying result, being nearly double that of the previous year. Three students had passed their examinations at the Royal College of Surgeons during the year, and had been granted diplomas in dental surgery, and eleven new students had entered the hospital during the year. The operations performed from October 1, 1894, to September 30, 1895, numbered 21,127, compared with 18,336 in the previous twelve months; while attendances of patients numbered 9,801, compared with 9,738. The financial statement showed a balance in hand of £116 2s. 2½d, after clearing off the adverse balance of £48 19s. at the end of September, 1894. The appeal for funds which was issued in December, 1894, did not result in as large an increase to the subscription list as was anticipated, the sum of £43 11s. 6d. only being received. In conclusion, the committee called the attention of subscribers and friends to the large and increasing claims which the hospital has upon them for support.

The Chairman, in moving the adoption of the report, referred with pleasure to the increased usefulness of the institution, as indicated by the report. No one, he thought, could fail to see the very great help the hospital must be to the suffering poor as a means of preserving their teeth and relieving pain, which was sometimes almost too acute to bear. The irritability and depression which accompanied toothache was almost demoralizing, and the anæsthetics now used, compared with the old brutal way of extracting teeth, were a very great boon. The hospital was one at which the poorest could get the best skill; they could get their teeth saved as far as possible, and without the detail of a dentist's

bill. He often wondered why the teeth in the present day seemed to deteriorate so much, he did not know whether it was because people took more animal food, or whether their nerves were more sensitive than used to be the case. The report from the surgical staff, he thought, was very satisfactory, and they must all be very much indebted to the staff for the ability with which they performed their duties.

Mr. J. W. Wilson, M.P., seconded the motion and emphasized what his Worship had said as to the use of the hospital. If anything was wanted to show them the need of the institution they had only to look back a few years, and see the enormous increase of cases attended. He thought that would bear much fruit in the future, and he trusted the public would not be slow in supporting, at any rate not the least important of Birmingham's hospitals.

The report was adopted.

Mr. J. A. Jones moved the thanks of the meeting to the honorary hospital staff and officers, and Mr. J. M. Smith seconded the motion which was unanimously agreed to.

Mr. Huxley then proposed the election of the Mayor (Councillor James Smith) as President, Lord Calthorpe as vice-president, Mr. J. W. Wilson as hon. treasurer, and Mr. W. C. Addinsell as hon. secretary for the ensuing year.

The resolution was seconded by Mr. Donagan, and agreed to.

On the motion of Mr. W. Thomas, seconded by Mr. Barrow, Messrs. F. R. Howard, W. T. Madin, J. Mountford, and J. E. Parrott were appointed hon. assistant dental surgeons: and Mr. Phillip Bates were elected hon. auditor.

The proceedings closed with a vote of thanks to the Mayor for presiding.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

ARTIFICIAL TEETH PLATES.

To the Editor of the "British Journal of Dental Science."

SIR,—As a wearer of Artificial Teeth for masticating purposes I write to you.

I find that food is not properly prepared for the body by artificial teeth which cover the surface of the mouth—either through the food "caking" or that the moisture other than from the salivary glands proper is an absolute essential for comfort arising after food has been

swallowed, and which is prevented from mixing with the food when the palate and lower gum is covered with vulcanite or other material.

I write this through my experimenting by swallowing food which has been masticated by my artificial teeth, but before being swallowed, I have taken the artificial pieces from my mouth so that the bolus has had the free action of the mouth, and this mode of having my food for days together, causes me to write.

I find that one feels perfectly comfortable by acting in the manner stated, whilst food swallowed *without* having the free action of the mouth cause one to feel "cold," the head somewhat "strained up," and a general feeling of discomfort in comparison to when the food has had the free action of mouth.

Perforated plates may be an improvement, but artificial teeth so constructed as *not* to cover the surface of the mouth would be better.

I think that a similar experiment to that which I have made would result in an improvement for the construction of teeth, for the comfort of those whose natural teeth are deficient and for whom artificial ones are prescribed.

I am,

Yours truly,

J. J. DAVEY.

Poplar, E.,

January, 31, 1896.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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TREATMENT OF DECIDUOUS TEETH.*

By J. H. JONES, L.D.S.I.

Mr. President and Gentlemen,—The subject I purpose introducing to your notice to-night has not, I think, been brought before this Society on any previous occasion, and I have introduced it because I feel it has not been considered as much as its importance demands. It is one that to me has for years occupied an amount of thought, and one that I feel is worthy the attention and consideration of every dentist. To my mind there is no work that calls for more earnest and painstaking care than the preservation of the deciduous teeth.

A great amount of time and energy has been devoted to the study of Prosthetic Dentistry, and new ideas are constantly brought before us by demonstrations, papers, and reviews on Crowning, Tipping, Inlays, and many other forms of mechanical skill; with very good results in some cases, and doubtful advantages in others, but on the whole tending to raise the standard till it may mechanically be considered *ars in arte*.

Whilst the improvements in these respective branches reflect great credit upon those who have so unsparingly given their time and labour to develop them, and are deserving of our highest praise for the energy they have dis-

* Read before the Manchester Odontological Society.

played, yet I think you will agree with me when I use the old axiom,—“prevention is better than cure.”

It is necessary, therefore, in the first place, that I say something of the importance of preserving the deciduous teeth, not that I am likely to say anything that could not have been said better by others present, nor that has not been more ably said elsewhere; but in order to call forth a good discussion, and to endeavour as far as I can by my somewhat disjointed remarks, to impress upon the minds of the members of this Society, the necessity of more earnest heed being given to this subject. Unless it become a part of your profession worthy of your regard, you will not be likely to attach that importance to it which it rightly deserves, or that will enable you to be the means of instilling into the minds of the parents with whom you constantly come in contact, the need of watching the temporary teeth of their children. If the first educationists are half-hearted, it is only natural to expect that those to whom they try to give a lesson will be still more so, and the children of the rising generation will be the sufferers. You will, I am sure, concede that the progress in dental knowledge is due to the education given to the public by dentists. If this be true with regard to the art and science of dentistry generally,—and I feel sure it is,—I see no reason why it should not be so in particular in that part of it on which the other parts so much depend. Though we may very imperfectly understand the first cause of decay in many cases, yet it is more incumbent upon us to endeavour to overcome the first signs of disease than to wait till such time as the teeth are past reparation and we have to resort to extraction. In every way possible we should try and preserve the temporary organs till such time as nature requires their removal to make way for their permanent substitutes.

There are, however, so many side issues involved in the

treatment of the temporary teeth, and opinions vary so much on the different modes of treatment, that I feel loth to give an opinion of my own, much less to lay down any plan of procedure that might imply I was endeavouring to lay down any principle that would be useful in general practice ; such is not my intention, knowing that no rule will apply but to a very limited extent. Every case will depend for success very much upon our own judgment and the amount of interest we take in it. Though our ideas may differ considerably in the means we use to an end, yet I venture to say that the very discussion of so important a topic, can only end in good both to the practitioner and patient.

We are constantly being told that the teeth of this generation are much worse than those of a former one. Whether this be true or not, I am not in a position to say. There may be, and no doubt is, more care being taken of the teeth now than was the case some years ago, hence the conclusion arrived at very naturally, that the teeth are deteriorating : whereas it may not be so much that deterioration is taking place, as that more is known of, and heard about the teeth than formerly. But we are all well aware that the condition of the mouths of our young patients is often in bad order, from whatever cause arising, and therefore it behoves us to try any feasible plan that will in any way tend to their improvement.

Much has been said of the advantages of Hypophosphates for giving strength to the permanent teeth, and other means of making up the deficiencies, but too little attention has been devoted to the temporary teeth. I shall no doubt be met with the remark that the temporary teeth have very little to do with the strength, or otherwise, of the permanent ones, as the crowns of the latter are well formed in their growth long before the primary ones are shed. That may be so, and no doubt is, but I contend that however good and

strong they may be, yet anything that is hurtful to the system generally will cause a diminution of blood supply, and the teeth will suffer along with the other parts of the body. How can it reasonably be expected that a child with a set of deciduous teeth in a bad state of decay will masticate its food as it ought to do? Is it surprising, therefore, that in consequence of imperfect mastication, or no mastication at all, imperfect assimilation follows, and the general system is impoverished, stomach troubles arise, feverish symptoms supervene, and the permanent teeth are robbed of their proper nutriment consequent not only on undigested food, but arising from neglected and aching teeth; the little one suffering constantly, whereas it might have had little or no pain if proper care had been exercised with regard to its temporary teeth.

In order to help to improve this state of things and the coming permanent teeth, it is advisable to retain by filling, and other means, [such as cleaning, the first set as long as possible. Not only does the strength of the second set demand this, but their regularity depends in no small measure upon their retention. How so? Well, theoretically they have no influence, or very little, on the positions of the coming teeth, but practically, they have a much greater amount than we often imagine, as is evidenced by irregularities that occur owing to roots of temporary molars turning, or otherwise misplacing first and second bicuspid; the too early extraction of the same teeth, allowing the sixth year molar to travel forwards; or, too early loss of temporary canines, permitting first bicuspid and lateral incisor to approximate, and the permanent canine to be forced outside the arch in an unsightly and prominent position.

I have given, I think, sufficient reasons for the preservation of the deciduous teeth, and I will now endeavour to give you some idea of my own experience, which, allow me to say, has

often been a very trying one, in overcoming the difficulties which so frequently present themselves when attending to little folks, but which in the end amply repay you for the effort. Some years ago, I had quite a run of children brought to me, of three years old and upwards, to have their teeth extracted on account of toothache, and I then came to the conclusion that it was better to save than extract them. I endeavoured to impress upon the minds of the parents the desirability of saving their children's teeth as much as possible, which I still continue to do. I early discovered it was a difficult task I had set myself to accomplish, and one that would need much tact and patience. The first thing necessary was to obtain the confidence of the little patients, carefully guarding against any unnecessary pain ; above all things, on no pretext whatever to deceive them. I must avoid fatiguing them, though, I am bound to confess, I have often been fatigued myself in the effort. Very often the children are easier to get on with than those who bring them, especially their parents. There are few children I cannot succeed with, if their parents will not interfere. It is, I own, not a desirable practice to cultivate, from a pecuniary point of view, and unless a sense of duty impels us to cope with this kind of practice, failure is inevitable.

What teeth of the deciduous set do I not try to save, but extract ?

I extract where I think I am unable to save, all teeth having pericementitis, as I reckon it unwise to leave teeth in an inflammatory condition in close proximity to developing ones. I extract all dead roots, not only because they are frequently a source of irritation and interfere with, rather than assist in, mastication, but being contiguous to other healthy teeth they are injurious to them. Dead teeth had generally better be removed ; though in some cases, if the pericementum is still living, and the tooth fairly healthy, I make an exception, and retain the tooth.

Often children come that require both extraction of teeth and filling of others. I attend to the latter first, and get the confidence of the child, and in this way what seemed,—and would be by the opposite procedure,—impracticable, can generally be carried out, because by the painless operation you have established a feeling of trustfulness which enables the child to undergo the more painful operation. If I am asked by a child “will it hurt?” I always say what I believe. It is necessary that parents be told the advantages of bringing their children to have their teeth filled before they have become painful. Another point too it is well to impress on the minds of parents is the advisability of bringing their children periodically to have their teeth inspected; if this be done as often as desired, children will rarely, if ever, have the toothache, and so children and parents will be saved much pain and inconvenience. Painless operations must be performed, and fatigue avoided, by giving short sittings—fifteen minutes or half-an-hour, according to the health and temperament of the child; it is better to arrange to see a child half-a-dozen times than to attempt too much at one visit, though parents often wish you to prolong your operations to avoid them coming so often, and in that way troubling them to bring their children; but having decided on that point in your own mind, be firm, and look forward to the success of your treatment.

Owing to the difficulties to be met with whilst manipulating in the mouths of children it results that much of the work is necessarily not so perfect as we wish, or as could be carried out in the mouths of adults. This arises from not being able to cut away freely, by the use of the engine, as much of decayed dentine as might be done in a permanent tooth. Superficial decay should be removed as far as pos-

sible ; especially if in contact with another healthy tooth, particularly a sixth-year molar or bicuspid. The walls may be trimmed conically to advantage, in order to prevent a sulcus being formed that would be likely to retain food particles. We must often forego shape for the greater gain of usefulness and durability. As we cannot use burs and drills so freely as with older patients, we shall be able to use chisels and mouth files to advantage—preferably the former—for cutting down the walls ; and the cavities can be well prepared by using excavators. Sometimes the engine can be used to advantage, but the other plan is more kindly taken to by children generally.

Notwithstanding, however, the greatest amount of care exercised, the pulp sometimes gets exposed whilst excavating ; in that case, as soon as possible, I apply carbolyzed resin to the exposure and then place a drop of chloro-percha, sufficiently thick just to drop from the end of an instrument upon the spot, over which I again put a layer of Waite's gutta-percha, very thin. On this, I am able to build up an amalgam or white filling ; in such a case preferably Fossiline, as it can be inserted with less pressure. Where there has been no exposure of pulp, I invariably use Nickold's gold amalgam, or a copper amalgam, oftener the former ; having used it for twenty years, I can speak well of its behaviour. It makes a good plug, and has one very decided advantage over many other fillings ; that is, supposing whilst filling a child's tooth it gets wet, a very likely thing to happen, you can still finish your filling with every hope of success, as it will not be likely to flake off like many other fillings often do when set. I look upon it as a submarine filling where not used too dry. The rubber dam will generally have to be dispensed with, but where it can be used, a piece about 1 inch by 2 inches, is, I find, the most convenient size to use. Recourse must

be had to lengths of Amadou, cut up ready to hand ; rolls of bibulous paper, small napkins, &c.

When a child is brought with toothache, from an exposed pulp, unless there is extensive inflammation as well, I usually put in a dressing of carbolized resin and tannin, after having cleared away any d bris that may be on or about it, by gently syringing with warm water, and very carefully drying. It is astonishing the soothing effect of warm water in these cases. If possible, in a day or two a fresh plug is put in, and by the end of a week the tooth can often be filled with gutta-percha over a layer of chloro-percha or artificial dentine. In time, if thought advisable, part of the gutta percha can be cut away, or it may be worn away, and an amalgam filling put in. If the pulp be too much exposed to be treated in this way, give relief by touching with *Ol. Caryophyllum*, or some such remedy at hand, and then destroy in the usual manner, by using but a very small quantity of arsenic, and leaving in position for ten or twelve days in order to avoid pain. It is always better to avoid destroying the pulp, if it can by any means be avoided, and it is not admissable where you suspect much absorption to have taken place, for fear of danger to the coming tooth. I should have no hesitation, and think the wiser course would be, extraction.

I have spoken of gutta percha varnish as useful in slight pulp exposure, but I look upon it as a sort of sheet-anchor in treating deciduous teeth generally ; for very often without it it would be next to impossible to insert a permanent filling, owing to the sensibility of the dentine : it acts as a non-conductor, and prevents the pain after filling that often arises from thermal changes where a metal is used, and the irritation occasioned by the acid in a white filling when it is being put into the tooth. However desirable it may be to remove all decay when filling deciduous teeth, if it occasion pain it must not be insisted on. It is good to be done

well if possible, but it is better still to retain the tooth though it be not so well done as we could wish.

Alveolar abscess in children does not seem to be so formidable a foe as it often appears to be in adults, owing no doubt to a more lax condition of fibre, and it can sometimes be cured ; not, however, by such drastic measures as are used for those of maturer years, but by frequent syringing with warm water and Fluid Carbolate, removing all decay and cleansing the pulp cavity by using Oxygen Peroxide, and inserting a pledget of wool saturated with Ol. Cinnamon and Iodoform, after using alcohol freely as a disinfectant. I have found this treatment efficacious, and have no doubt that many teeth of children have been lost that might advantageously have been saved if we had been more painstaking and set a higher value on the temporary teeth. Whilst cases do arise where it would be beneficial to save such a tooth, yet if the time be near when its permanent substitute should appear, a suppurating tooth had better be extracted.

Root filling is recommended by some writers, but it is a plan I have not yet adopted in deciduous teeth, except with cotton wool, saturated with some antiseptic, and I have been most fortunate in having no trouble with the cases I have so treated. The time taken up in root-filling in this heroic way is likely to take longer than the most patient of children are willing to quietly submit to. Theoretically it may be all right, but in practice I fear it would not work out well.

Another remark or two, gentlemen, and I draw to a close. In all cases where we have to do work for children, it is necessary that we have everything at hand. See to it that nothing we are likely to want during the operation is missing, and by placing our appliances in something like methodical order before beginning, we shall not pick up and put down two or three times an instrument we do not require, and in this way keep our little patient on the strain. We must en-

deavour to keep its attention by lively conversation as much as possible to divert the mind, and though this may cost us an effort, still when the end in view is successfully accomplished, we shall not, I am sure, regret that effort.

Thanking you, gentlemen, for your kindly attention, I leave the subject in your hands.

THE DENTAL ANATOMY OF THE INVERTEBRATES.*

By Mr. ERNEST F. B. BEYER.

Mr. President and Gentlemen,—Almost every large group of organisms below the vertebrates, until we reach the Molluscoidea and lower radiated animals, exhibits in some of its members one form or another of prehensile or masticatory apparatus connected with the alimentary canal. None of these exhibit true homologies with vertebrate teeth, though sometimes presenting remarkable similarity to the latter in external form.

Throughout the invertebrates teeth are dermal structures, however much special modifications may mask their relations. They may consist of calcified connective tissue, of horny matter or of chitin, or an allied substance. Chitin and substances with very similar qualities are almost characteristic products of invertebrate organization. Of them are formed the wing cases of beetles and most of the hard elastic tissues of the exterior of insects. A chitinous substance is insoluble in boiling liquor potassæ, and hardly affected by immersion in the strongest acids. Its lightness, elasticity and strength

* Read before the Students' Society of the Victoria Dental Hospital, Manchester.

fit it remarkably for the work required of the insect exo-skeleton and similar uses. The teeth and jaws of molluscs, the nippers, mandibles and setæ of worms, and many similar invertebrate organs, are composed to a greater or less extent of chitinous materials.

In the annelids, so-called teeth occur in many groups, but, on the whole, partake rather of the nature of jaws than teeth, though frequently double on each side, or even more numerous. This group comprises most of the creatures commonly called worms, as well as the leeches, etc. Their bodies, as well shown in the common earth-worm, are divided into more or less well-defined rings of muscular tissue, which correspond internally to segments, often more or less partitioned off from each other. Those rings or annulæ for the most part contain successive groups of similar organs, but the anterior segments are usually modified to bear special organs.

In general the jaws are developed on the second or buccal segment, or on a proboscis which is itself an appendage of this segment, and may be protruded from the mouth to a considerable distance. They are chitinous, most commonly paired, lateral and opposite, of almost infinitely varied form, resembling in a general way the maxillæ of insects, and mimicking in miniature, combs, saws, rasps, claws, etc.

In the leeches (*Hirudinæ*) the mouth is provided with three lenticular jaws with the projecting edges finely serrated, and having a partly rotatory motion about a point central to the three. The medicinal leech has two rows of serrations on each jaw; other species doubtless vary in the buccal armature.

Among the echinoderms, sea-urchins, starfish, crinoids, etc., certain forms possess an apparatus commonly known as "Aristotle's lantern," which contains what may fairly be regarded as true teeth. In the recent crinoids or sea-lilies

the mouth is closed by lobes of the perisome, which may contain calcareous plates hardly to be called teeth. The other groups are edentulous.

The singular and remarkable mouth apparatus in our common sea-urchin or sea-chestnut (*Echinus*) has been observed by everyone who has passed any time at the sea-

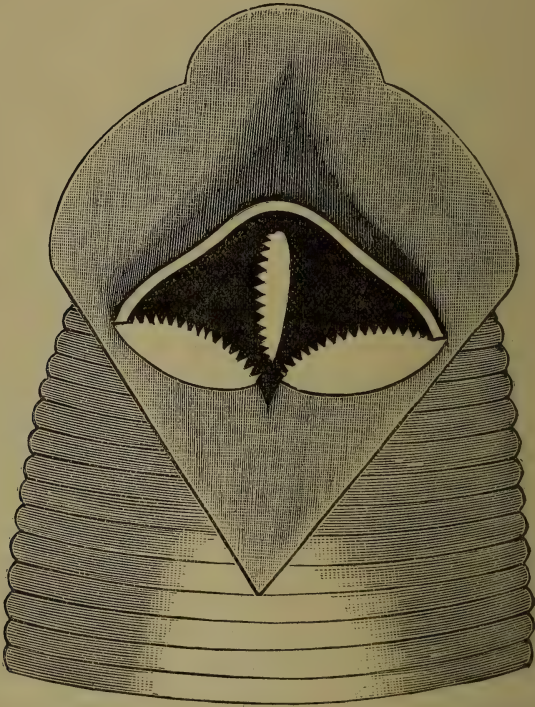


Fig. 1.—DENTAL APPARATUS OF THE MEDICINAL LEECH.

side. It is frequently detached from the rest of the animal, and retains its form for some time, even while washed about by the waves on the beach. It is very complicated in its arrangement, but in essentials consists of five hard, calcareous wedge-shaped rackets or alveoli, each containing one porce-

laminous chisel-shaped tooth. The teeth are, like those of rodents, softer on the inner than on the outer side, and therefore in wearing always preserve a sharp edge. The union of the alveoli produces a pentagonal cone with its apex pointing downwards, and formed by the coming together of the points of the five teeth. Each alveolus consists of two halves united in the middle line, and each half of an upper and lower portion. In life the alveolus is concealed within the tissues, only the point of the tooth projecting. The socket is interradianal in position with relation to the rest of the echinus, or opposite the interambulacra or spaces between the rows of walking suckers. Above and between the upper ends of the alveolar pieces are certain rather thick radial pieces called rotulæ or falces, each of which in the Echinidæ bears a bifurcated piece known as the radius. In this group, at the oral end of the ambulacra (of the interambulacra in cidaris) are calcified internal arched processes called auriculæ, each formed of two pieces. The auriculæ are supposed to be homologous with the internal ambulacral ossicles of the starfishes, and ophiurans or brittle stars. Retractor muscles pass to the outer edge of the alveoli from the auriculæ; the former are also connected with transverse muscular fibres. The oral framework is also provided with protracted muscles proceeding from the alveoli to the lower edge of the corona, besides special muscles connected with the radii.

The food of the Echinidæ consists of seaweed or small shellfish and crustaceans, or, in the case of those forms which are edentulous, of sea-mud and coral sand, which contains much nutritive material. While the teeth are useful in breaking up the harder parts of the food, no grinding or true mastication is possible, as they only meet near their sharp and slender points.

The Rotifera or Wheel animalculæ have a mastax which is the muscular covering of the walls or trophi. It has thick

walls and is slightly three-lobed, each lobe investing one of the three principal parts of which the trophi consist. There is an opening in front toward the ventral surface at the bottom of the buccal funnel, whose walls here merge into those of the mastax ; and there is a posterior opening toward^s the dorsal surface just above the œsophagus. The contained hard parts or trophi, consist of two hammer-like bodies, the mallei, and of a third anvil piece called the incus. Each malleus has for its head or uncus a piece which, when spread out by pressure is like a comb with five unequal teeth, but which under ordinary circumstances is much curved so as to bring the teeth close together.

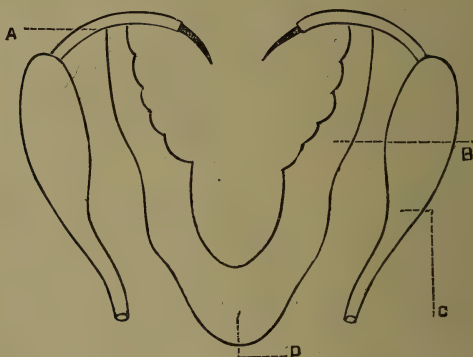


Fig. 2.—DIAGRAM OF THE DENTAL APPARATUS OF ROTIFERA
(*Diglena Forcicipata*).

A—Incus forming Malleus. B—Rami. C—Manubrium. D—Fulcrum

The handle of each of these hammers is a single stout piece called the manubrium. The anvil or incus roughly resembles a triangular prism, of which one end (the dorsal) has been tapered to a point. It is divided into two equal pieces, the rami, by a cut from the dorsal, to the ventral surface, so as to leave them just attached to each other at the broad end. The two rami rest there on what looks like a stem, the fulcrum ; but which viewed laterally is seen to be a slender plate.

Muscles springing from the walls of the mastax, are attached to various parts of the mallei and rami, and act so as to cause the unci to approach and recede from each other. But the incus is fastened to the corresponding ramus ; and in consequence, as the walls recede, the rami are opened, and when the mallei approach each other the rami are closed.

From these arrangements it results that all the food which falls from the buccal funnel into the mastax, is first torn by the sharp points of the unci, and then crushed between the opposing surfaces of the rami.

Among the Crustacea, lobsters, shrimps, crabs, etc., the maxillary organs are but modifications of entire limbs translated from the locomotive series and set apart as special mouth organs. Most of the Crustacea have a suitable masticatory apparatus of this sort, but in certain parasitic forms become organs of attachment or are altogether wanting. If we examine the digestive organs of one of the higher Crustacea, such as the crab or lobster, we find the stomach divided into two regions, the anterior or cardiac and the posterior or pyloric regions. These are separated more by their functions than by their form. The anterior part is provided with certain masticatory appendages or stomacholiths, often termed teeth, though more analogous to a sort of calcareous gizzard. These consist of several calcareous pieces moved by appropriate muscles, inserted in the membranous walls of the stomach, armed with a smooth median plate, and lateral molar-like organs, whose mimetic resemblance to the molar teeth of some forms of mammalia affords a beautiful illustration of the way in which, through the selective influence of similar functions, analogous structures may be built up in organs which have no homology whatever. Two smaller points, bicuspid in the lobster, tricuspid in the crab, complete the calcareous apparatus ; in the pylorus a series of fine hairs is placed, which doubtless act as a strainer, preventing the escape of coarser

particles of food until they have been sufficiently comminuted by these grinding organs. The denticulations on the claws of Crustacea have of course no claim to be considered as teeth though they assist in breaking up the food.

The Mollusca have been divided into two groups, the Glossophora and the Lipocephala. The Glossophora have a head

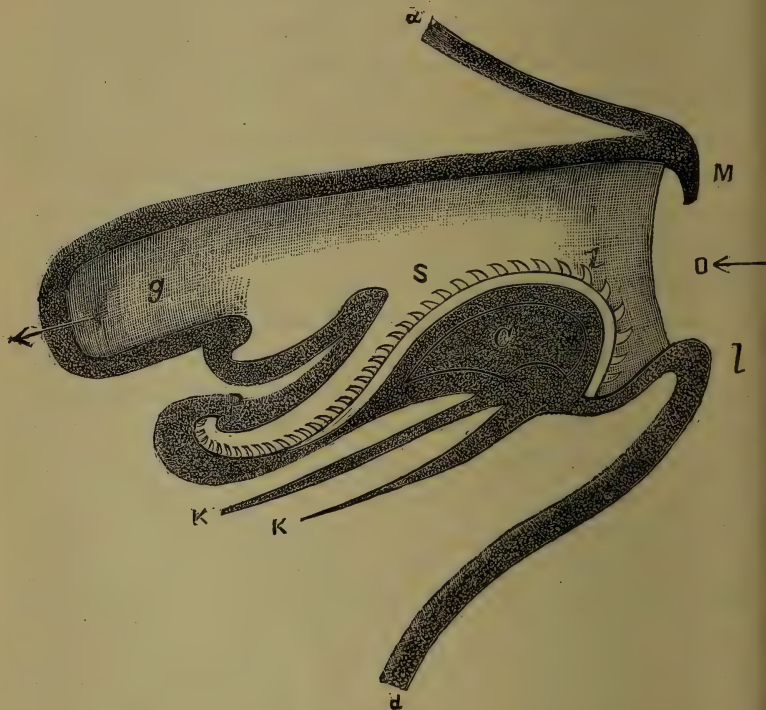


Fig. 3.—VERTICAL SECTIONAL DIAGRAM OF THE MOLLUSCAN RADULAR APPARATUS.

M—Mandible or Jaw. O—Mouth. L—Lower Lip. D D'—Upper and Lower Epidermis of the Muzzle. G—Gullet. T—Teeth set on the odontophore which rests on the muscular radular floor, supported by the muscular buccal mass, from which extend backward retraction muscular muscles (K K) and in which is (C) imbedded the buccal cartilage. S—The opening of the radular Sac. P—Papilla which secretes the teeth and odontophore.

and a dental apparatus, but the Lipocephala possess neither. The Glossophora (snail, etc.) have a remarkable organ, the odontophora, consisting of a lingual ribbon, rasp, or radula with its cushion and muscles. The general structure of the odontophora is as follows. Essentially it is a tube-like outgrowth, the radular sac in the median line of the ventral floor of the stomodeum, upon the inner surface of which is formed a chitinous band, (the radula) beset with minute teeth like a rasp.

Anteriorly the ventral walls of the diverticulum are converted into cartilage, to which protractor and retractor muscles are attached, so that by the action of the former the cartilage, with the anterior end of the ribbon, resting firmly upon it, may be brought forward into the space, between the lips of the oral aperture, and made to exert there a backward and forward rasping action, by the alternate contraction of retractor and protractor muscles attached to the cartilage. But in many Glossophora (e.g. the whelks) the apparatus is complicated by the fact that the diverticulum itself, with its contained radula rests but loosely on the cartilage and has special muscles attached to each end of it, arising from the body wall; these muscles pull the whole diverticulum or radular sac alternately backwards and forwards over the surface of the cartilage. This action which is quite distinct from the movement of the cartilage itself, may be witnessed in a whelk, if the pharynx be opened while it is alive. It has also been seen in living transparent gastropods. The chitinous ribbon is continuously growing forward from the tube-like diverticulum, as a finger-nail does from its bed, and thus the wearing away of the part which rests on the cartilage and is brought into active use, is made up for by the advance of the ribbon in the same way as the wearing down of the finger-nail is counterbalanced by its own forward growth. And just as the new substance of the finger-nail is

formed in the concealed part, sunk posteriorly below a fold of skin, and yet is continually carried forward with the forward movement of the bed on which it rests, and which it forms its undermost layers, so is the new substance of the radula formed in the compressed extremities of the radular sac, and carried forward by the forward movements of the bed on which it rests and by which is formed its undermost layer, This forward-moving bed is not merely the ventral wall of the radular diverticulum, but includes also that portion of the floor of the oral cavity to which the radula adheres.

At the spot where the radula ceases, the forward growth movement of the floor also ceases, just as in the case of the finger nail the similar growth movement ceases at the line where the nail becomes free. The radula or cuticular product of the slowly moving bed can be stripped off, and is then found to consist of a ribbon-like area, upon which are set numerous toothlike processes, of various form in transverse rows, which follow one another closely, and exactly resemble one another in the form of their teeth. The tooth-like processes in a single transverse row are of very different shape and number, in different members of the Glossophora, and it is possible to use a formula for their description. Thus when in each row there is a single median tooth, with three teeth on each side of it, more or less closely resembling one another, we write the formula 3.1.3. When there are additional lateral pieces of a different shape to those immediately adjoining the central tooth, we indicate them by the figure 0., repeated to represent the number, thus 0000 1.1.1 0000 is the formula for the lingual teeth of *Chiton Stellaria*, a single median tooth; an admedian series, and a lateral series may be thus distinguished. In some Glossophora only median teeth are present, or large median teeth with a single small admedian tooth on each side of it; these are termed *Rachiglossa* (Formula — 1 — or 1.1.1.). In a large number of

Glossophora we have three admedian on each side, and one median, no lateral pieces. These are termed Taenioglossa (3.1.3.). Those with numerous lateral pieces, four to six or more admedian pieces, and a median piece or tooth, are termed Rhipidoglossa (X 6 1 6 X.), X for indefinite num-



Fig. 4.—RACHIGLOSSATE TEETH.

ber of lateral pieces. The Toxoglossa have 1.0.1., the central tooth being absent, and the lateral teeth peculiarly long and connected with muscles. The term Ptenoglossa is applied to those Glossophora, in which the radula presents no median tooth, but an indefinite and large number of admedian teeth, giving the formula X 0 X. When the admedian teeth are



Fig. 5.—TÆNIOGLOSSATE TEETH.

indefinite (40 or 50) and a median tooth is present, the term Myriaglossa is applied (X 1 X). It must be understood that the pieces or teeth thus formulated may themselves vary very much in form, being either flat plates or denticulated hooks or spine-like bodies. The muscular development in connection with the whole buccal mass, and with each part of

the radular apparatus, is exceedingly complicated ; as many as twenty distinct muscles having been enumerated in connection with this organ. In addition to the radula and correlated with its developments, we find almost universally present in the Glossophora, a pair of horny jaws, (usually calcified),



Fig. 6.—TOXOGLOSSATE TEETH.

Tooth of *Conus*, showing barbs and poison ducts.

developed as cuticular productions upon the epidermis of the lips. The radula and the shelly jaws of the Glossophora enable their possessors not only to voraciously attack vegetable food, but the radula is used in some instances for boring the shells of other mollusca, and the jaws for crushing the shells of crustacea, and for wounding even vertebrata. The



Fig. 7.—PTENOGLOSSATE TEETH.

dental apparatus of the insects consists of an upper lip, upper jaws, first pair of maxillæ or lower jaws, and second pair of maxillæ. The upper lip is a plate which is usually movably articulated to the cephalic shield, and covers the mouth from above. Beneath the upper lip, to the right and left are the mandibles, or upper jaws, in the form of two

pulpless biting plates ; they are unjointed and therefore more powerful as masticatory organs. The first pair of maxillæ or lower jaws have a more complicated structure. They are composed of several joints, and are therefore adapted for less powerful but varied movements, in aid of the masticatory process.

In conclusion, I tender my sincere thanks to Dr. C. H. Hurst, senior demonstrator in Zoology, and to Dr. Chalmers, demonstrator in Anatomy, Owens College, for lending me the microscopic specimens, and also for the many suggestions and valuable assistance so willingly and kindly rendered to me when in search of material.

In compiling this paper, the following books were freely used :—

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Rotifera. Hudson & Gosse.

American System of Dentistry. Vol. I. By Litch.

BALSAM VARNISH.—Dr. Howard's antiseptic varnish for coating cavities preparatory to filling, consists of Canada balsam, to which has been added mercuric-chloride and thymol, evaporated over a water-bath from twenty to twenty-eight hours, and finally dissolved in chloroform. The proper consistency can only be determined by experience and careful observation, and it is upon this that its usefulness depends. When improperly prepared it is valueless. It is not, of course, intended to retain fillings, but to aid in their adaptation, and to act as an anti-thermal and protective coating.

Dental Practitioner and Advertiser.

PRESIDENTIAL ADDRESS.*

By THOMAS G. READ, D.M.D., L.D.S.

Gentlemen,—An article of food of special interest to us as dentists is bread. Bread, you all know, is made chiefly from wheat.

An attempt will now be made to prove that the present very white bread produced from very fine flour is a predisposing cause of dental caries.

Brown bread has been recommended as an excellent tooth-forming food, but now it is often of very little value for that purpose, being sometimes made from similar very fine flour to the very white bread, with the addition of some bran. In a grain of wheat the elements of nutrition exist not only in the most elaborated, but also in the most concentrated state, and are so well adapted for the sustenance of man, that many millions subsist almost exclusively on it, hence its preparation for food is of the greatest importance, and if efficiently performed a food is produced of greater nutritive value than any other.

The lower animals are usually fed upon the grain of oats, of barley and of leguminous plants, and the use of wheat is almost completely restricted to the human family.

The various races of man, and the different breeds of animals appear to be largely due to the food that has been consumed.

The soil on which the food is grown and the form in which it is eaten appear to have important bearings on the results.

In the horse greater care is taken in the feeding than we usually take in our own. In our race-horse, bones of excellent quality, and muscles of great strength are required, but

* Delivered before the Students' Society, National Dental Hospital, London.

no lumber, the diet consists chiefly of English oats and hay ; in the cart-horse great weight and strong bones and muscles are required, the diet is more varied ; now in man the diet is not usually ruled by what is best for him, but by what he likes or can obtain.

When one has observed the great care that is taken with the diet of certain animals, it might be fancied that the food of a domestic animal was of more importance than that of man. Crushed oats are excellent for foals and yearlings, as young animals, like children, have an abundant flow of saliva ; the whole grain is best for full-mouthed horses. Cart horses are best reared on a chalk or lime-stone soil, on a soil deficient in lime they have not enough bone, and the hair on the legs is very scanty.

A few years ago a thoroughbred stallion and similar mares were taken to Ireland and kept on a lime-stone soil, the foals were noticed to be much superior to their parents in bone ; it may be inferred that one reason Ireland can rear such excellent hunters is owing to her splendid lime-stone pastures.

About six years ago a friend who breeds thoroughbreds, had a foal colt that he informed me he should be pleased to sell for £10, as he expected him to die at any moment, as he was very rickety and had chronic diarrhoea, which a veterinary surgeon had been treating for some time without any practical relief. I suggested that a certain preparation of lime-salts should be given with his food ; my advice was taken, and the first time the colt ran as a two-year-old he ran third to a colt that was after the race made favourite for the next year's Derby.

The late Sir Joseph Hawley bred race-horses with good bone ; his stud farm was on chalk.

When in the States I went over a hackney stud farm and noticed that the horses lacked the bone and substance that

our hackney-horses have, and was informed that nothing but the best imported English hackney blood had been used in forming this stud, and that new blood was frequently bought in England at high prices to endeavour to keep the quality as high as possible. All over the world our horses, cows and sheep are imported to keep up the quality of the studs, herds and flocks, which degenerate unless fresh blood is frequently obtained from the British Isles; this, it may be inferred, is largely due to the food consumed, and that English grown food is the best in the world for English stock or Englishmen.

The food grown in a country should be the food that the men and animals produced in that country require.

Our climate being very variable the food produced is suited for those who live in a changeable climate.

In 1895 we grew sufficient wheat to produce bread for us for only two months; our possessions sent us sufficient for less than two months, and other countries exported wheat to England in quantities sufficient for over eight months.

Therefore we could only have eaten bread for two months made from wheat grown in these islands.

The supply of bread-stuffs at the present moment in the British Isles is only enough to last us about four weeks.

Wheat by the processes of grinding and sifting is resolvable into offals and flour.

In a grain of wheat, tooth, bone, muscle and fat-forming principles are all present in admirable proportions, but during the present generation the demands of bakers have caused a complete change in the resulting food. The chief tooth and bone-forming elements are certain earthy matters, the most important muscle-forming parts are gluten and albumen and the principal fat-forming portions are starch and gum. The husk of wheat contains the greater part of the earthy matters, the periphery of the kernel has a less amount, and the centre has none or only a trace.

Gluten, which besides helping to form muscle, also assists in forming teeth and bones, diminishes in proportion from the part near the husk to the centre of the grain.

Foreign wheat is drier than British, therefore a sack of flour made from foreign grain soaks up more water than a sack of the same weight of flour made from British wheat. The bakers of course prefer the flour that will make the greatest number of loaves, and buy as much as possible that made from foreign wheat.

Bread made from British wheat keeps moist longer than that made from foreign grain, which produces bread that soon becomes dry and stale.

Some years ago when we were growing more wheat than at present the consumption of wheat per head was about one bushel less per annum than it is now.

Do we eat more bread now than formerly? I think not and that the true cause of the increased consumption is because more of our bread is made from foreign wheat and thus becomes stale sooner, and therefore more is wasted, that is, we now waste about a bushel more wheat per head per annum than formerly.

From the earliest history of the world wheat has been ground between stones, and no other method was known until early in the present generation, when a system of milling with rollers came into use.

In a grindstone mill, the wheat to be ground is fed in through a hole in the upper or running stone, when by reason of the dress or cut put into the surfaces of stone, assisted by centrifugal force, the wheat becomes pulverised on its way to the periphery or skirt of the stones, from whence it passes through mechanical sifters and dressers, and the offals are separated from the flour. By this system very fine or very white flour cannot be obtained, as the material only passes once between the grindstones, and during the process

the pressure of the upper stone upon the lower one in the attempt to grind all the flour from the wheat, pulverizes much of the bran into fine particles, which become mixed with the flour and discolours it.

The men who fought at Waterloo were reared on bread made from flour produced by the above process ; the physique and constitution does not appear to have improved since then, in fact, it is said that our army is much inferior in physique.

Now in the modern invention, the roller mill, the wheat is at first only rolled to smash it in order to separate the kernel part from the husk ; the operation is repeated several times between other fluted iron rollers until the object aimed at is obtained ; then the parts of the kernel pass on to be ground on smooth iron rolls, this rolling is succeeded by dressing in cylinders covered with silk, through which the flour made between the smooth rolls passes, and the rollings and dressings are repeated until all the flour is extracted and only the polard is left.

The chief object of a roller miller is to obtain branless flour and flourless bran. The grindstones will not grind dry foreign wheat well unless it is mixed with a certain amount of British grain ; on the other hand, British wheat owing to the large amount of natural moisture it contains, cannot well be ground on the rollers unless some foreign wheat is mixed with it.

The bakers preferring flour that will soak up the greatest proportion of water, have caused many millers to use rollers instead of the grindstones, as the flour produced is much finer.

The bread our forefathers ate was made from flour produced in grindstone mills and since the advent of rollers the physique and constitution of the nation appears to have degenerated. It is a well known fact that the teeth are not as good, and the jaws smaller.

We may infer that a predisposing cause of dental caries is the very white bread produced from very fine flour, as the excessive milling causes the most nutritious portions of the grain to be removed, and the close milling to obtain such very fine flour, to soak up much water produces bread that requires very little mastication, with the result that the bread is often swallowed with a deficient amount of saliva, and perfect digestion and assimilation retarded, as the other digestive fluids have to perform certain functions which the saliva should fulfil. It will thus be understood that grindstone flour appears to be better suited to assist in building up the body and repairing tissue waste, as it is more likely to contain more of the most nutritious parts of the wheat, and the flour is of a sufficient coarseness to produce sufficient mastication, so that an efficient flow of saliva is encouraged, and the bread swallowed with an ample supply, to assist perfect digestion and easy assimilation.

Much bran, as a rule, is not required in bread, as it is very indigestible, but in certain costive conditions some is of considerable importance.

Surely as dentists we should have a higher aim than simply correcting the ravages of dental caries.

We should endeavour to prevent, or to at least reduce the chance of dental caries occurring, and if eating bread made from flour produced in grindstone mills really is likely to build up the body and repair tissue waste, and thus reduce the chance of dental caries, better than the very white bread made from very fine flour, the subject must be of the deepest interest to us.

Two other predisposing causes of dental caries will be just mentioned, they are the excessive amount of study which young children now undergo, and the deficient amount of exercise they take.

Such living must lower the general tone of all the organs of the body, and cause the teeth to be more predisposed to decay, as often the teeth are the first part of the body to show signs of the effects of mal-nutrition.

TOOTH-WASHES

The following replies to correspondents in the *Chemist and Druggist* are interesting.

Carbolic Tooth powder.—The best basis for this is precipitated silica. When precipitated chalk is used the carbolic acid is slowly combined with the alkali, although it does not matter much, for 1 per cent. of the acid in a tooth powder can really do little good as an antiseptic. An ounce of powdered soap, $\frac{1}{2}$ lb. of the silica, with $\frac{1}{2}$ dr. of carbolic acid and 10 drops of otto of rose, give an excellent dentifrice. Mix the ingredients well, and sift several times.

Our experience of the Quillaia Tooth-wash is that in the course of a few months it does become muddy through hydrolysis of the saponin contained in it. You will find it better in your case to modify the formula thus :—Mix together 5 oz. of rectified spirit, 6 oz. of water, and 3 oz. of glycerine, and in this menstruum macerate 4 oz. of coarsely powdered quillaia-bark for a week ; strain and press the marc. Reserve this tincture. Wash the marc with 3 oz of proof spirit, and in the washings dissolve :—

| | | | | |
|-----------------|-----|-----|-----|------|
| Otto rosæ | ... | ... | ... | mxv. |
| Ol. gaultheriæ | ... | ... | ... | mxv. |
| Ol. menth. pip. | ... | ... | ... | mx. |
| Ol. rosæ geran. | ... | ... | ... | mx. |
| Ol. caryoph. | ... | ... | ... | mx. |

Then add :

| | | | | |
|--------------------|-----|-----|-----|--------|
| Tr. krameriæ | ... | ... | ... | ʒ iss. |
| Elixir. saccharin. | ... | ... | ... | ʒiij. |

With this mix the reserved tincture, add water to 40 oz., and set aside for ten days ; then filter.

British Journal of Dental Science.

LONDON, MARCH 2, 1896.

TEMPORARY TEETH.

At the last meeting of the Manchester Odontological Society, Mr. J. H. Jones read a paper which dealt with the importance of treating the deciduous teeth. The author disclaimed the idea that he was introducing any new matter, although it would appear that the subject had not before been discussed by that Society, but he was able to refer to some of the more important points upon which to raise discussion. One of these had reference to the education of parents in regard to their children's teeth, but we cannot help thinking that there is still a certain amount of necessity for the formulation of professional opinion as to conservative treatment of the temporary teeth, and if Mr. Jones' discourse and the subsequent discussion tend in any way to restrain routine extraction, a useful end will have been served. The responsibilities of the modern dentist are increasing rather than diminishing, and however much the work may appear to become more arduous, we believe that the conscientious operator is the man of the future. The education of the Dentist in right principles must always, perforce, precede that of the Parent.

Let us consider a far too common instance. A child of six years who has the dentist amongst his collection of Bogies (provided by the ignorant nurse, if not by the thoughtless parent) is finally brought into the operating room, and then only because of toothache. The dentist recognises that he has here one of the most troublesome cases within his sphere, demanding patience, skill, diplomacy, and even courage. We may pass over the preliminary skirmish which leads to an inspection of the mouth. It will then likely enough be found that all the temporary molars

show signs of caries ; some of them may have fistulous openings, or be merely represented by the roots. The permanent molars are not erupted, and the bicuspidis are not due until five or six years have elapsed. The dentist recognises that certain teeth can and should be saved, and this with little pain ; on the other hand extraction, with momentary but more severe pain, promises an easy way out of the immediate difficulty. There can be no doubt as to the duty of the operator, but the forces arrayed against him make his position a difficult one. The attitude of the parent (it may be one of impatience or merely of apathy), and the resentment of the frightened child, place the dentist at a disadvantage, but if he is true to himself and his charge, and gains the day, the victory is worth much to all concerned.

Referring to Mr. Jones' paper, we are glad to find a sound position taken as to the education of dentists and parents upon the conservative treatment of the deciduous teeth. His description of methods is also instructive, for whilst recognising differences of opinion the author records what in his own experience has been found satisfactory. And whilst we think these teeth should certainly be saved, we do not wish to put the case too strongly, and thus we agree that the operation of filling must be adapted to the patient, and that it is good to retain the tooth even if the work is not so well done as one could wish. No doubt this position may invite criticism from some operators who would stipulate for the rubber dam and all details, arguing that anything short of the most thorough manipulation will bring discredit sooner or later. Two points in the author's communication are we think more justly to be questioned. First, as to the application of small quantities of arsenic for a long time to devitalize ; secondly, the extraction of roots. Sometimes these latter are found in such a "quiet" condition that they may be safely left to hold the field, indeed excision of the carious crown has been suggested in certain cases. Of two other points with which we strongly agree, the first, periodical inspection, would ensure the removal of

retained roots before they could do much harm, and is of great importance in other ways. The second point is the absolute necessity of gaining the confidence of the patient. With the two rules of systematic supervision, and of never deceiving the child about painful operations much may be done, if either be abrogated conservative treatment is well-nigh hopeless.

“GAS” FROM THE MAIN.—A medical man was rung up about 1 a.m. by a man who complained of toothache, and wished to have chloroform administered. The doctor explained that without proper preparation and assistance this was out of the question. Then the patient demanded “Gas, and was informed that he was talking not to a dentist but to a medical man, who did not keep the necessary appliances in his house. “Gas,” said the patient, “have you not a meter?”

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—We mentioned some little time back that there was reason to believe that the present examination for the Licence in Dental Surgery would be sub-divided into two, and that some additional subjects would be required of the candidates. A committee which was appointed for the purpose has considered the matter and drawn up a scheme for various alterations in the curriculum of study. At a meeting of the Council, and on the recommendation of the Committee, the following resolution was agreed to :—That the teachers of the three schools of dental surgery in London—namely, the Dental Hospital of London, Guy’s Hospital, and the National Dental Hospital, shall be afforded the opportunity of expressing their opinion upon the proposed alterations. We understand that the teachers were requested to return their remarks and suggestions by the 1st inst.

DENTISTRY IN GERMANY.—According to a communication which appears in *L'Odontologie*, the total number of persons practising the Dental art in Germany is about 3,600. More than 3000 are mechanical dentists without a diploma; 205 are dental doctors or surgeons with foreign diplomas, whilst 408 are barbers, jewellers, &c. None of these may take the title of *Zahnarzte* under a penalty of 300 marks fine. The *Zahnarzte* number 977 and have all obtained a diploma from a German University.

FRENCH DENTISTS.—There are in France seven professional Societies besides the Scientific ones, and it has been proposed that by their fusion a much more important and powerful Society might be formed to watch over the interests of the profession. The chief editor of *Le Monde Dentaire* makes a stirring appeal and points out the advantages which would result from such a union. M. P. Dubois in *L'Odontologie* also speaks approvingly and shows how some such scheme, with a central Executive, may be brought about.

THE TREATMENT OF BURNS.—Mr. W. H. Brown has read a paper on this subject at Leeds. He uses as a dressing eucalyptic oil which is non-toxic and non-irritating, but recommends that in order to lessen or prevent septicæmia tissues which appear to be destroyed beyond chance of recovery, should be cut or scraped away under an anæsthetic. In order to obviate another cause of death, namely shock, a dose of morphia should be given, this also allows the parts to be carefully cleansed and dressed. The continuous use of a warm boric acid bath was also advocated; it protects the burns from air and keeps the patient warm.

OUR ORIGINAL ARTICLES.—Owing to the publication in the present issue of the JOURNAL of the interesting paper

on the Invertebrata, we are obliged to hold over until the 15th inst. the next instalments of Mr. Roughton's and of Mr. Rose's contributions upon Oral Surgery and Dental Mechanics.

A NEW JOURNAL.—*Pediatrics* is the title of a new Journal which is devoted to the diseases of Children. The first article is upon the Feeding of Infants. Professor A. Jacobi reviews the question at length, and while urging the importance of the sterilization of milk in the strongest possible terms, yet calls attention to the fact that "sterilization has been claimed to be no unmixed boon because of its changing the chemical constituents of milk."

In speaking of the method of Dr. Rotch, which consists in sterilization, mechanical separation in order to remove impurities, and remixture of the milk and cream, he says: "I know of a number of babies who in health and disease have done well on the protracted use of the laboratory milk. Only one observation struck me in a few cases. The formation of the muscles and part of the bones appeared to be slow, the teeth came a number of weeks or even months too late, the cranial bones turned slightly soft in a few instances. In a few such cases I had to add animal broths or juice before the usual time; in one I tried phosphates (elixir phosphori), which was rejected, in others it was well borne and useful." Jacobi in a foot-note ventures the prediction that "before long more than to-day cereals must be given to make teeth when milk food alone does not suffice for their development."

A YEAR'S DEATHS FROM POISONING.—The Registrar General's report for England and Wales for 1894 shows that deaths due to toxic agents are on the increase. The two agents accountable for the largest number of deaths are opium (with laudanum and morphine) and carbolic acid.

OBITUARY.

John Turner, L.D.S., one of Edinburgh's most promising practitioners, died in his residence on Thursday, Feb. 13th, aged 35, after a lingering illness. He was one of the founders of the Edinburgh Dental Students' Society, being early elected to its councils, was secretary in 1889-90, then vice-president and finally president during session 1890-91.

He was an assistant surgeon in the Dental Hospital, where his thorough practical knowledge, and his careful and conscientious work, found recognition by all who had the pleasure of his acquaintance.

He was earnest in his convictions, and faithful to his friends, and in his death the profession has to mourn one who faithfully worked for its best interests. The Students' Society by the hand of its president, placed a wreath on his last resting place, as a tribute to his great worth, and as a mark of their esteem.

Abstracts of British & Foreign Journals.

SOME PRACTICAL POINTS IN PORCELAIN WORK.

By Dr. A. C. McALPIN, Warren, Pa.

It is not the purpose of this paper to give, in elaborate detail, a description of all the operations possible in what is specified as porcelain work. Porcelain work well done, is very durable and artistic in appearance; done badly, it is more apparently discreditable to the operator than any other class of work in operative dentistry. A conspicuous and radical fault found in porcelain operations is the carelessness with which colours are selected, the universal tendency being to choose too light and too yellow shades. The operator, disregarding the habits of his patient with regard to his teeth, selects porcelain facings and fillings to match the newly-polished, or dry teeth, when oftentimes he well knows that the patient will allow the teeth to lapse into the old

condition, and that the porcelain will not gather a like deposit with the natural teeth. A highly glazed porcelain facing on a crown should rarely be left. It may be remedied by deadening the surface with sandpaper disks, and polishing with buff and pumice. In porcelain fillings the colour of the cement used as the retaining medium influences the shade, and care must be taken in its selection. The experienced operator in porcelain work will abandon small approximal fillings, and confine himself to labial fillings, conspicuous corners, and tips on teeth eroded, or worn to cup shape. A porcelain filling involves the preparation of the cavity in such a way that the matrix can be easily withdrawn, without affecting its shape, and the completed filling can be inserted. Very acute marginal angles in the fillings should be avoided. The use of separators enters largely in the successful insertion of approximal fillings, and simplifies an operation when many times it would seem impossible to insert the filling with a sufficient body to it for anchorage.

To form a porcelain filling, take platinum plate of a gauge as thin as it is possible to use without tearing, anneal it to white heat, cool and place it over the cavity, forming a matrix by pressing it to the walls with cotton pellets, rolled hard, rubber points and burnishers, and getting the matrix well defined by burnishing it to the marginal lines and over the surface of the tooth around the cavity, the latter to stiffen it and facilitate handling. Then fill the matrix with porcelain body to match the natural tooth, and fuse. Remove the platinum, make slight retaining grooves in the body of the filling with a diamond disk, these grooves to abut as nearly as possible upon similar ones made in the side walls of the cavity. A mere scratch in labial cavities will suffice. Then dry the cavity and filling, and insert with a thin mixture of cement, cover with sandarac, and allow to set well before removing the surplus cement. Extreme care should be taken that the marginal lines should be so perfect that subsequent grinding on them will be unnecessary. In filling cervico-labial cavities, pink porcelain body can be used to take the place of gum tissue, lost through recession. In large corners and tips, oftentimes short double-headed pins should be made and used, one head in the filling, the other as an anchorage button in the cavity.

The operations next described are those in which porcelain work is most valuable. In these the jacket crown is used. Teeth that have been repeatedly filled with metals and have

as often failed, can be restored to their natural appearance and use without disturbing the living pulp. When the natural crown has decayed beyond the metal filling, and the tooth is yet alive, or the crown is undeveloped, or is irregular in form, or twisted in its socket, or slightly out of position, or worn away by friction or erosion, it can be crowned and regulated without sacrificing the pulp, and with a crown whose facing has the firmest attachments throughout its entire palatine surface, thus making the strongest porcelain-faced crown known. These crowns are so constructed that easy access to the pulp in direct line with the root canal can be had in case of subsequent trouble. They are commonly used only on the twenty anterior teeth, as gold crowns are usually practicable for the molars. The crown is made as follows: Reduce the natural crown to a size which will admit of a twenty-eight American gauge platinum plate over the entire palatine and approximal surfaces, and a twenty-two gauge porcelain facing. Obliterate the cervical ridge, then fit the cervical circumference of the stub with a thirty gauge platinum cylindrical tube (in making which, lap the metal ends a little), solder this with pure gold, using as little as possible, place the tube on the stub, mark it on a line with the palatine surfaces of the approximating teeth and gums, and grind the tube inside the lines with a dry stone, to such thinness that it can be burnished to the stub without affecting the cervical adaptation. Then solder to this surface, with pure gold, (using as little as possible) a twenty-eight American gauge platinum plate, *this* to form the entire palatine and about half the approximal surfaces of the crown. Then mark and grind the labial surface of the tube and adapt to the stub by pressure without burnishing. Use for this an old amalgam serrated plugger, that the ground surface may remain rough for the adhesion of the porcelain, then grind the back of the veneer facing so that, when placed on the shell, it will be in the position required when finished. All platinum surfaces to which porcelain body is to adhere, should be roughened with a dry stone. Remove the shell from the stub, heat it to white heat, to cleanse and prevent carbonation, which might discolour the facing, and place the facing on the shell in correct position, with the porcelain body between, and dry well before baking. Bake to a slight gloss only on the porcelain body, cool slowly and finish the same as in Richmond crown work.

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The ordinary monthly meeting of the above Society was held at the Grand Hotel, Aytoun Street, on the 3rd December, 1895. Mr. W. Simms, the President, in the chair.

NEW MEMBERS.

The following gentlemen were elected non-resident members:—Mr. T. Jackson, Ranxborough House, Park Street, Lytham; Mr. A. Leeming, L.D.S. (Edin.), 17, Richmond Terrace, Blackburn; Mr. J. C. Lingford, L.D.S. (Eng.), The Crescent, St. Anne's-on-the-sea; Mr. A. A. Matthews, L.D.S. (Eng.), 12, North Parade, Bradford; Mr. A. Peace, Holly Bank, Holmfirth.

APPLICATIONS FOR MEMBERSHIP

were read from the following gentlemen:—Mr. G. Brunton, Hillary Mount, Leeds; Mr. F. Pritchard, L.D.S. (Eng.), Preston Road, Blackburn.

CASUAL COMMUNICATIONS.

Mr. WHITTAKER related an incident which had occurred that evening in the use of Electricity for Dental purposes. In turning on the electric light at his chair side to illuminate the mouth, he found something was wrong with the current, as that particular lamp would not light, although other lights in the room, as well as the motor, were in working order. He therefore lighted his ordinary gas reflector kept on a movable bracket for such emergencies, and by the aid of this light proceeded with the operation. This involved the use of the dental engine as worked by the electric motor. This part of the work being completed, and having the handpiece in his hand, Mr. Whittaker pushed away the metal gas bracket. The moment the handpiece touched the bracket Mr. Whittaker received a shock which flung him forcibly to the ground, but which fortunately produced no injury beyond a slight abrasion. The lamp which had refused to light was afterwards found burnt out and the wires fused.

Mr. W. BROUGHTON said that in Manchester there was a leakage of electricity from the main current, and he himself had received a somewhat similar shock in that very room

during the course of a demonstration. The reason Mr. Whittaker received a shock was because at the moment of turning on the gas he completed the circuit of the electricity which was escaping to the earth from the main. In Manchester they had the five wire system, by means of which the Corporation could transmit electric currents of varying power. Looking at the lamp shown by Mr. Whittaker, he should judge he had received a shock equal to 300 volts. They could run up to 1000 volts without any serious damage, but the shock from even 100 volts was bad enough. The best thing to do was to inform the Corporation of the case.

Mr. MURPHY said he had a case to mention which might be of interest to those who were in the habit of crowning teeth. Some six months ago he put on a crown which went on all right for about three months. It then suddenly became loose. He treated it in the manner usual in such cases, but without success. There was a very great amount of pus continually oozing from the cavity. He at length decided to extract the tooth, when he found that owing to the root of the tooth having a decided curve, the drill had perforated through the wall. It was rather curious that the tooth remained good for so long.

In answer to Mr. Whittaker, Mr. Murphy said there was nothing at the time he performed the operations to show that any perforation had taken place. It was a Logan crown, and he filled the tooth up to the root with osteo. The lateral on the other side was crowned in exactly the same way, and had given no trouble.

DISCUSSION ON THE DEMONSTRATIONS.

Mr. WHITTAKER said that Mr. Renshaw's demonstration of crown making performed at the previous meeting was a very good one. He had the same apparatus himself although he had not used it quite so much as he had intended. He preferred in fitting a crown to fit the band direct to the root in preference to fitting the finished crown direct to the root, as was done by Mr. Renshaw, according to Dr. Patrick's method. Dr. Patrick's method of making and fitting a crown was all right for an experienced man, but he trembled for the results in the hands of a student. Mr. Grundy's hydraulic apparatus struck him as being very useful.

Mr. MURPHY concurred with Mr. Whittaker's opinion as to the inadvisability of fitting on a crown direct to the root

without previously fitting the band. The importance of that point was strongly impressed upon him by Dr. Patrick himself.

Mr. RENSRAW, in reply, said he guarded against the crown not fitting properly by first of all getting an accurate model of the root, and by seeing that the crown fitted the model without a flaw before placing it in position in the mouth. Although his experience of the method had been somewhat limited, still in every case in which he had used it the results had been satisfactory.

Mr. JONES then read his paper on "Treatment of Deciduous Teeth," which is published on page 193.

DISCUSSION.

The discussion was opened by Professor LUND who expressed in the first instance the interest and pleasure with which he had listened to the paper. In regard to surgical dentistry, prevention by anticipation, as it were, was better than cure; and the paper dealt with the deciduous teeth in anticipation of what might possibly occur in the secondary teeth. There was just one question he should like to ask. It was touching the changes which took place in the roots of the deciduous teeth. He believed, looking at it from a physiological point of view, that it was generally admitted that the teeth were absorbed in their roots, not by pressure, but by physiological action—that the roots of the teeth were absorbed ahead of the progress of the second teeth and not from the pressure of those teeth. But if that were so, and if the change were a physiological and not a mechanical one, then they could see that a physiological change might be going on in the deciduous as well as the permanent teeth at the same time. He quite agreed with Mr. Jones that the state of health had an important influence on the proper growth and development of the permanent teeth. Then in regard to the possibility of the too early removal of the deciduous teeth, he thought the old idea of at once extracting the temporary teeth when they were causing pain had been long ago exploded. In removing deciduous teeth which were not dead but simply in the way, they had to watch that they did not interfere with the wonderful time rate in the growth of the teeth. It was most wonderful to watch Nature's processes for bringing forth the teeth at their proper periods—periods which might be retarded or advanced in sympathy with the general health. It had seemed to him in watching the development of the teeth in

young children, there was not a correspondence, but exactly a sort of balance between the eruption of the permanent teeth and the cranial bones, in regard to the more hasty or delayed development of the teeth. He had often been consulted on the growth of young children, particularly in reference to Rickets, and he had often looked at their teeth. If he found a child of about six years old with, say, 8, 10, or 12 teeth he was almost sure to find it with unclosed fontanelle, but when he found the fontanelle closed, then the child never had so many teeth; which seems to show that nature had not power to fully develop both centres together. He thought the medical profession could be of immense use to the dental profession by telling parents that they cannot take their children to the dentist too early, thereby in all probability preventing them suffering from toothache, and at the same time securing them better health. (Applause).

Mr. DOUGAN said he was strongly in accord with Mr. Jones upon the vital necessity of preserving the teeth of young children. If, however, they could not prevent a tooth giving continuous pain then extract it, or otherwise the child would contract a faulty and imperfect mastication, and through the system being insufficiently nourished the second teeth would suffer. With regard to exposed pulps it was very easy to expose the pulp in the primary teeth. In such instances "capping" was not usually successful, and it was better to destroy the pulps. He agreed with Mr. Jones's method of destroying the pulp, especially as to the length of time, and did not believe in being too hasty.

Mr. MURPHY said the great difficulty in treating children's teeth was that the parents did not bring them early enough. In some cases he had refused to extract children's teeth even though they had been sent for that purpose by a doctor. The great danger of removing the second temporary molar too early was lest the second bicuspid grew forward and so crowded the front teeth. He also thought that if doctors would teach the parents to give children suitable diet that the decay would be greatly lessened.

Mr. RENSHAW said the root of the evil lay with the parents not bringing their children soon enough. He thought the British Dental Association, their own Society, and the medical profession generally ought to unite in teaching parents the paramount necessity of having their children's teeth periodically examined. Personally he had a strong objection to the wholesale extraction of temporary teeth, but he had

known cases where such a course had been adopted without any evil results.

Mr. COLLETT said no doubt the majority of those present were in accord with the sentiment expressed in Mr. Jones's paper. No doubt the great consideration was to give a child that was suffering from its teeth relief, as in no other way could its confidence be gained. He did not believe in leaving arsenic in the mouth for the period mentioned by Mr. Jones in order to destroy the pulp of a temporary tooth, as he thought it would be likely to lead to inflammation.

Mr. D. HEADRIDGE said he also was strongly in favour of retaining the temporary teeth even if only for a short time. He believed in retaining the temporary teeth in order to enable the child to masticate its food properly, which led, in his opinion, to the permanent teeth being benefited.

Mr. P. HEADRIDGE pointed out the importance of preserving the temporary teeth even if only to secure perfect mastication, as he was sure such a course tended to the eruption of the permanent teeth in better condition. He had tried many experiments in order to save an exposed nerve in temporary teeth, but had never been successful.

The PRESIDENT said there was no doubt that the subject was a most important one. The members who had spoken had not differentiated as to the teeth they had chiefly to treat and which really only amounted to eight in number—the molars—the incisors and canines being much less liable to decay and giving less trouble when they did decay. It was most desirable to save the molars, as they were not changed until later in life. If their young patients would come to them when about three years old no doubt their difficulties would be largely overcome. They would be able to fill the small cavities, and the children would suffer no pain. Unless they could keep the teeth healthy and free from pain it was better to extract them. He agreed with those who objected to arsenic being used to destroy an exposed pulp in a temporary tooth. In filling small cavities in the crowns of temporary molars he himself used tin and gold, as the presence of moisture with such material was no detriment. He did not believe in oxy-phosphate, as it seemed so soon to wash away.

Mr. JONES having replied, the President expressed the thanks of the Society to him for his excellent paper, and the meeting then terminated.

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

A meeting of this Society was held on Friday, Feb. 7th at 8 o'clock. The President, T. G. Read, Esq., was in the chair. The minutes of the last ordinary meeting were read and confirmed, and the usual welcome was given to visitors.

Upon Casual Communications being called for, Mr. Moore showed a model of an upper jaw, having a supernumerary tooth erupted behind the left lateral. It was in shape similar to a lateral, but had two well defined cusps at the cingulum.

Mr. GREETHAM showed two crowns, made by a firm of American Specialists, as examples of how crowns should not be made.

Mr. FARMER communicated a case of double fracture of the lower jaw. There was a compound fracture between the right lower lateral and canine, and a simple fracture of the right ascending ramus. The case was treated by the application of a Hammond splint, which was worn for eight weeks. Mr. Farmer presented the models of both the upper and lower jaws together with the original splint to the Society.

The PRESIDENT said that he had some time ago treated a fracture of the lower jaw of a man aged 80, by the application of a Hammond splint, and the patient got rapidly well.

The President then delivered his Opening Address, which is published at page 214.

Mr. C. W. GLASSINGTON proposed a hearty vote of thanks to the President for his Address,

This was seconded by Mr. BROWNE-THOMAS, and carried unanimously.

The meeting then terminated.

To make platinum and gold plate, melt with blow pipe pure gold on a piece of platinum and roll to the desired thickness. the result will be as good as any you can buy.

Dr. J. G. Templeton.

Dr. J. Y. Crawford says that whenever the dentine is found non-sensitive it may be regarded as a pathological signal; an evidence of paresis on that side of the pulp, the dentine being partially devitalised.

Dental News.

LIVERPOOL DENTAL HOSPITAL.

The Lord Mayor presided at the annual meeting of the Liverpool Dental Hospital, in the Town Hall. Among those present were Sir James Poole (chairman of the hospital).

The thirty-fifth annual report of the Committee stated that the total number of patients admitted since the formation of the hospital amounted to 358,288. During the past year the number of patients treated at the hospital had been 21,182, and of operations 29,935, which was an increase as compared with the previous year, the increase in respect of operations relating to conservative dentistry and extractions under anæsthetics being 1,615. The patients' voluntary contributions amounted during the past year to £85 2s. The committee regret that the hope they expressed in their last report, that the balance of £385 17s. 11d. then remaining unprovided for in respect of the cost of the alterations and extensions might be met by contributions in response to the appeal, had not been fulfilled, and there remained a balance of £786 still to be provided for. There was also a balance of £45 7s. 11d. due to the hon. treasurer on working account, and the institution was in urgent need of an increased subscription list to enable it to pay its way, and to further develop its resources to meet the increased demands upon it. The committee recorded with thanks donations to the general fund amounting to £3 10 6d, and to the alterations and extensions fund amounting to £61 4s., and they had further to thank the Liverpool Dramatic Company for the performance given in aid of the hospital in April last, which resulted in the addition to its funds of £33 10s. The thanks of the committee were due to the committee of the Hospital Sunday Fund for their contribution of £26 10s., and to the medical and surgical, and dental staff for their valuable services during the past year. The committee also desired to express their thanks to Mr. H. C. Quinby for kindly continuing his grant for dental school prizes.

The Chairman, in moving the adoption of the report, said that what sometimes escaped notice was the extreme economy with which the work of the hospital was being done as contrasted with similar hospitals in other places. This reflected the highest credit upon the management, and upon those who contribute services, either for a small remuneration or none at all. His lordship referred to the marked advance that had been made in the science of dentistry during the last thirty years, and related, as evidence of the importance of dentistry, the fact that he had three times more applications from people for orders for the Dental Hospital than for any other hospital. Everybody knew the acute pain and suffering that could be allayed at an institution of that description. He regretted the present adverse financial balance, and offered a donation of £50 towards the funds (applause).

Mr. H. C. Quinby, in seconding, explained, from a professional point of view, the nature of their work at the hospital and their means of doing it. He said:—I do this in the earnest hope that when the many charitable people in Liverpool, always so ready to give support to good work, have learned more of what we do in philanthropic and educational work, we shall not have to appeal in vain to have our small debt paid off and our subscription list increased, so that our educational resources may not be so heavily taxed to meet the necessities of our philanthropic work. Every one who has suffered from bad teeth will be ready enough to admit that they are the cause of much misery and unhappiness: but

only those who have made human teeth and their functions a special study have realised how essential their preservation is to the health and vigour of body and mind. To nurse up and preserve a healthy set of teeth we must begin with the mothers, and teach them how to look after their children's first, as well as their second teeth. To keep them absolutely clean is to keep them healthy but how many mothers ever look into their children's mouths after they had passed the period of infantile teething? The great majority never teach cleanliness in the mouth never practise it themselves, and the result is that the children's teeth very soon reach that condition of decay and death which poison the food before it reaches the stomach. In the meantime, the Dental Hospital is the only source of instruction for those who cannot afford to pay private practice fees, and too often the untaught only go there to get relief from actual suffering, and then with only one idea of how relief can be given; but if they listen to the teaching, they may learn that teeth were given to us for other purposes than to be pulled out. The Dental School is an essential part of the Dental Hospital, but to a certain extent a separate organisation. The necessities of teaching the students in the Dental School compel the saving of the teeth of children and of youth whenever such treatment is possible. And the teaching of modern dental science finds many methods of preserving even an aching tooth in a more or less imperfect condition, but still capable of performing its functions in a comparatively painless and satisfactory manner. All the work in the hospital is done in accordance with the advice and under the inspection of members of the honorary staff or of the house surgeon and his assistant. But the school greatly needs two or three demonstrators, with a small salary, to assist in the teaching, and the students' fees would amply suffice for their stipends if they were justly appropriated. The working of the hospital is wonderfully economical and well it may be, for the honorary staff give their services; and the fees paid by the students for their teaching, instead of being, as the students naturally expect, entirely devoted to educational purposes, are equally divided between school expenses and the general expenses of the hospital, amounting in the last year to nearly one quarter of the whole income of the latter. This is very unfair to the students, and should not be permitted by the people of this great city, whose struggling but respectable poor are treated at our hospital with a skill and care which are scarcely more than equalled in private practice. There is in this city a great number of young people, male and female, who are apprentices, learning to be the future artisans and tradesmen and women; and all our experience as dentists teaches us that these young people, from twelve to twenty years of age, require, and must have, if they are to preserve anything like a useful set of teeth, a great deal of skilled and constant attention to their dental organs. The wages they are earning are barely enough to provide them with food and necessary raiment. Their teeth will not wait until they are earning more money, and these are of all classes of patients, the most desirable for the dental student, because they exhibit in the one mouth the greatest variety of interesting cases for skilled restoration, with the best prospect of permanent benefit. We earnestly commend the work of the hospital to the employers of this class of labour. Every one of these should be a liberal subscriber, or a life governor to an institution like ours. Our school stands very high for the work it is doing, while its debt and expenses are very small compared to what is asked for and obtained in other large cities. We could clear ourselves from debt with £1,200, and an increase of £200 to our subscription list would make us quite happy. Our alterations and extensions, which have given us one of the best equipped and most comfortable dental hospitals I have ever seen, were completed at a cost

of £1,250; and our whole income from all sources for the year 1894 amounted to £364 6s 5d. We ask the people of Liverpool to help us to maintain our position in dental science.

The report was unanimously adopted. Votes of thanks were accorded to the retiring president, chairman, committee, and medical and dental staff. The Lord Mayor was then elected president and the other officers reappointed.

Sir James Poole moved a vote thanks to the Lord Mayor for presiding, and said that the small amount of capital on which the hospital had to work contrasted with the enormous amount of benefit it conferred was a matter for pride.

Brigade-Surgeon Nicholson, in seconding, said that the people in Lancashire were particularly afflicted with decayed teeth. He paid a tribute to the work of the hospital, which he said he had found invaluable in the cases of recruits received at Seaforth Barracks, many of whom he found suffering from decayed teeth.

The Lord Mayor, in acknowledging the vote, agreed that it was a fact that in Lancashire the weak point physically were the teeth. The cause of this he did not know, but it evidenced the greater need for an institution like the Dental Hospital.

BRIGHTON DENTAL HOSPITAL.

The time has probably gone by for the necessity of justifying the existence of the Special Hospital in our midst; but if any such justification were really required the management of the Brighton, Hove, and Preston Dental Hospital would be able to present a very strong case in its behalf. In their Report, presented at the annual meeting of the Governors, held at the Institution, Queen's road, Brighton, the Committee of Management observed that since the opening of the hospital, close upon ten years ago, the number of cases treated had increased every year.

At the end of 1887, when the Dental Hospital had been in existence a year and a half, over 2,000 patients had been received; and in 1888 the number for the twelve months was 2,214; whilst in 1889 it rose to 2,585. And so the increase had continued till the number of cases treated in 1895 amounted to 3,055, the largest number yet admitted in any one year. An important point in connection with these returns was that a very large proportion of patients were children under 14 years of age, a class of patients who would derive the greatest benefit in the future. Last year they numbered 987. It was a matter for regret, however, that an appeal for increased assistance in the shape of subscriptions was necessary, for experience shewed that the balance on the wrong side increased with the increase in the usefulness and work of the Institution. The deficit now amounted to £26 5s. 5d., and the Committee had to deplore that the Hospital Saturday Fund yielded last year only £20 to the Institution, or just half of what it did in 1894. The Committee were anxious it should be understood that owing to the careful supervision exercised in the admission of applicants it was rare for anyone to receive the benefit of the Institution who, from social position, ought to seek the advice or aid of a private qualified practitioner; and they further pointed out that it was the only Institution of its kind south of London, that its benefits were open to all irrespective of nationality or creed, and that no fees of any kind were charged. With regard to the

finances, the receipts had been £193 9s. 8d., including cash advances by the Treasurer and Secretary of £34 12s. 5d.; subscriptions £69 15s. 3d.; Hospital Saturday Fund, £20 17s. 2d. The expenditure had been £190 2s. 8d., leaving a balance at the bank of £8 7s., which, deducted from the sum due to the Treasurer and Secretary, left a deficit of £26 5s. 5d.

At the meeting at which this statement was submitted, the chair was occupied by the President of the Institution, Alderman Sir Joseph Ewart M.D., J.P., who proposed, the adoption of the Report. He remarked with satisfaction upon the great increase which had taken place in the usefulness of the Institution. There had, he said, been a movement in Brighton during the last few months to point out to the various medical institutions that a large portion of their relief was given to persons who could well afford to pay for it. No doubt there had been some overstatement of the case; but in several of the institutions in the town, there could, he thought, be no question that this relief, was, to a certain extent, abused; and how it was to be prevented it was difficult to say. It was, however, satisfactory to know that no such abuse could take place in that Institution, where careful supervision as to the recipients was exercised. He regretted the presence of a deficit in the accounts, and considering that it was the only Dental Hospital south of London, and that the whole of the work there was done gratuitously, he thought the circumstance was not very creditable to those who should support them. He particularly commended the value of the Institution to children in preserving the usefulness and beauty of their teeth; and declaring that it would be a pity to allow the efficiency of such an institution to be impaired in any way by want of funds, he observed that part of this deficiency was due to the smaller donation received from the Hospital Saturday Fund. The amount of that fund varied, of course; but he hoped that this year the efforts of the Mayor, whose energy in good works of this character he heartily applauded, would result in a larger sum being realised.

The motion was seconded by Mr. Breed, who called attention to the fact that, while the Institution was open to all, they had no subscriber from an adjoining town. He hoped this would be taken note of, and that the advantage of being able to recommend patients to the Hospital, would be recognised outside the town.

The motion having been agreed to, Alderman Sir Joseph Ewart was re-elected President, on the proposition of Mr. Wood, seconded by Mr. Rymer; and, on the motion of Mr. I. Wells, seconded by Mr. Marriott, the Vice-Presidents were re-appointed, the name of the Mayor (Alderman Blaker) being added to the list, subject to his consent being given.

THE GLASGOW PROSECUTION.

MR. CHAS. S. TOMES, F.R.S. writes as follows to the *Dundee Advertiser* :—

The comments of Sheriff Campbell Smith in delivering judgment upon this case, and the editorial article in your issue of January 21st, seem to call for a few words from some one familiar with the working of the Dentists' Act. The defendant pleaded guilty, and the Sheriff inflicted a nominal fine and small costs. So far good. The Sheriff had to decide upon facts before him, and may have considered that circumstance extenuated the breach of the law, although those who have had much

experience in these cases have become somewhat sceptical as to these breaches of the law being committed through any sort of inadvertence. And, although much that was said by the Sheriff showed that he had made himself acquainted with the words and the spirit of the law, yet he let drop several expressions to which, as judicial utterances, exception may fairly be taken.

As remarked by the Sheriff, "It was no part of his duty to scrutinise the principles of justice which underlay a statute." Nevertheless, he virtually does so repeatedly in the course of the case. The Legislature has seen fit to secure for the public the power of selecting persons who have received an appropriate education, and have—except in the cases of those who were in practice prior to the passing of the Acts—been tested by examination. This has been done in the law, in medicine, in dental surgery, in veterinary surgery, and in pharmaceutical chemistry, by prohibiting all persons not so qualified from the use of certain descriptive titles which denote the possession of these several qualifications,

This is the whole point at issue. It is not a question of any isolated Act of legislation, but of a general principle adopted in this and nearly every other civilised country. Indeed, in this matter most countries have far more stringent regulations than those which prevail here. Hence it seems almost absurd to speak of the monopoly of a word. That word, or combination of words, is a description, a designation of something particular, reserved for the use of those who are correctly described by it, and forbidden to others. Thus, in the particular case of dental surgery it tells the public that the person using it either was in practice prior to 1878, and hence has had at least 18 years' experience, or else that he has been educated as prescribed by the qualifying bodies, viz., the English, Scotch, and Irish Royal Colleges of Surgeons and the Faculty of Physicians and Surgeons of Glasgow, and has been examined as to his competence and approved by one of them.

The inaccurate and misleading letter of the Secretary of the Association of Unregistered Dentists calls for no comment. Its statements are sufficiently answered by what has already been said.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DENTAL EXAMINATION.

The following gentlemen having passed the necessary examination, have been admitted Licentiates in Dental Surgery of the College:—Mr. William King Carew, (Dublin), and Mr. John Alfred Poock (Norwich).

The next examination is fixed to take place on Monday, May 11th, 1896.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of January, 1895.

| | |
|---|------|
| Number of Patients attended | 995 |
| Number of Extractions | 456 |
| Number of Extractions under Anæsthetics | 167 |
| Gold Stoppings | 113 |
| Other Stoppings | 207 |
| Miscellaneous { advice, temporary fillings, sealings, dressings, &c. | 276 |
| Crowns | 2 |
| Irregularities | 5 |
| Total | 1226 |

J. THEAKSTON, J. BUTTERWORTH, *House Dental Surgeons.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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British Journal of Dental Science.

No. 676. LONDON, MARCH 16, 1896. VOL. XXXIX.

THE NATURE OF ANÆSTHESIA : AN APPENDED NOTE.*

By DUDLEY BUXTON, M.D., B.S.,

Member of the Royal College of Physicians, Lecturer on
Anæsthetics in University College Hospital, and Anæsthetist
in the Dental Hospital of London.

Introductory.

To understand the true nature of anæsthesia has proved a difficult problem to many. To explain it is no mere academic exercise, for given such an explanation, it must influence us alike in the methods we adopt in handling the various anæsthetics and the means we adopt to prevent inherent dangers or to avert accidental perils. For example, in days when nitrous oxide was deemed to be an asphyxiant it was the practice to give it rigidly excluding all air. Now we recognise it has a true anæsthetic action, and so give it, as we exhibit other general anæsthetics, with air or oxygen to avoid the occurrence of asphyxial symptoms as unnecessary as they are undesirable. Nor should we be justified in employing substances as powerful as are anæsthetics, unless we could accurately appreciate their physiological behaviour. It is to inquire what we know about anæsthesia that this note is written.

* Read before the Odontological Society of Great Britain.

Paths of Anæsthesia.—(a) *Nerve endings*; (b) *sensory nerves*; (c) *ganglionic centres*; (d) *perceptive mechanism*.

Anæsthesia occurs under various conditions. All are familiar with the disorders of sensation which occur in various forms of nervous disease, and give rise to hyperæsthesia on the one hand, and anæsthesia upon the other. (a) Variations in the inter-relations of the end-organs of the skin or mucous membrane; (b) of the sensory nerve, or nerve of conveyance; (c) of the ganglionic nerve centres which translate the sensory stimulus into a feeling; and (d) the consciousness which perceives the feeling as pain or pleasure, may under morbid conditions of the organism give rise to true anæsthesia. Artificially we are able to bring about the same state of things producing a transient anæsthesia. Thus, by the use of cocaine we act upon the nerve ends in skin and mucous membranes, and prevent conveyance of sensory stimuli passing along the nerves. In the same manner carbolic acid or chloroform when applied to mucous membrane or even skin, will, by coagulating the albuminous materials with which they are brought in contact, cause anæsthesia. General anæsthetics even in a very early stage will act upon (c) the ganglionic nerve tissues and prevent painful sensations being recognised. A few inspirations of ether or chloroform will without paralysing motion or dulling the conductivity of the nerves, remove sense of pain even though the patient may struggle, fight, or express in no measured terms, his views on what is passing through his mind. He is in the land of dreams, and his talk and his action have relation with phantom forms and illusory communications peopling that teeming waste. The curtain has dropped betwixt him and earth. In hypnotism we possess an example of a state in which pain is felt, but perceived as pleasure. It is, after all, life is not; only what it seems. The curious in such matters will find from Moll's book many examples of unquestionable instances

of absolute anæsthesia, although there was every reason to believe that both the end organs in the skin, the sensory tracts and the ganglionic nerve tissue were intact and capable of producing and conveying sense stimuli; nevertheless the perception arrived at was not that of pain. The perceptive mechanism was blocked. In the days of Moore, anæsthesia was attempted by compression of the nerve trunks, and nerve sensations were in this way blocked at the point of pressure. Thus every link in the chain between skin which initiates the sense stimulus and the nerve centre which initiates the perception of pain, has been tested in the endeavour to achieve surgical anæsthesia.

Peripheral Sense Organ Anæsthesia.—Local anæsthesia, the blocking of the sense stimulus at the skin or mucous membrane is, of course, of little value for any save the most trivial operations. The agents employed and the elaborate plans suggested to produce it have not proved themselves safe or sufficient. Bichât, whose ever delightful book on "Life and Death" deserves more study than it gets now-a-days, taught the duality of life, a life of mere functional existence, and one of relativity. In anæsthesia produced by agents such as nitrous oxide, ether, chloroform, the life of relativity falls into abeyance, while the functional life or existence persists. But just as it is found impossible to limit the activity of a local anæsthetic to a regional area, so is it impossible to draw a hard and fast line between the influence of a general anæsthetic upon the cerebral centres and its overflow to the vital centres.

Aim of Anæsthesia.—The problem before us is to discover how best to produce anæsthesia without allowing the ordinary processes of life to be trenched upon. We have advanced some distance along the road leading to this discovery, but we still have very much to learn, and what is more, very much more to unlearn. Whatever personal satisfaction may

be the result of a frame of mind which leads its owner to believe he knows all there is to be known about anæsthetics and anæsthesia, it is one which, sooner or later, will not be shared by the friends of some of his patients.

*Study of the Action of Anæsthetics.**—In the course of a very able paper on anæsthesia Lauder Brunton suggests alcohol as one of the best substances to study to arrive at an idea of the way in which the general anæsthetics act. He adds that carbonic anhydride is the most widely distributed body having claims to the title of anæsthetic.

Definition of Anæsthesia.—It may be useful in this place to ask what definition of anæsthetic is to be adopted. Of course I use the word in its colloquial acceptation, the one first suggested by Dr. Oliver Wendell Holmes. It seems to be now generally admitted that although many things may produce loss of sensation through abeyance of the faculty whereby we feel pain, yet none should be regarded as anæsthetics unless they exert some definite influence upon the tissues of the body rendering them indifferent to pain and that quite irrespective of their preventing due access to the tissues of some vital constituent. An ox pole-axed is rendered anæsthetic; a man poisoned by a charcoal stove grows anæsthetic after inhaling the fumes of carbonic oxide gas until he is practically at the verge of death; an indifferent gas such as nitrogen, can by excluding oxygen, produce asphyxia, in the advanced stage of which, perception to pain grows deadened or lost. In these cases the stunning, the carbonic oxide poisoning, the oxygen starvation due to the indifferent gas, act by virtue of interference with necessary vital processes but possess in themselves no anæsthetic properties and are not anæsthetic. It is true that carbonic anhydride

* *Lancet*, 1895, vol. i., pp. 49, 80 and 143.

has been employed both as a general and a local anæsthetic, nitrogen has also had its vogue ; but as yet pole-axing has met with but scant favour save for the lower animals.

True and false Anæsthesia.—Brown Séquard* has pointed out that when carbonic anhydride chloroform and other vapours are allowed to impinge upon the mucous membrane of the larynx, trachea, or even upon certain skin areas, while they are prevented from entering the lungs, they produce unconsciousness of pain although the animal is awake and alert. Brown Séquard's theory that stimulation of the area supplied by the superior laryngeal branch of the vagus produced a sort of reflex inhibition of the brain's power of perception does not concern us at present. Carbonic anhydride has been also used as a general anæsthetic. Ozanam† employed a mixture of 75 carbonic anhydride to 25 of air. He rendered a young man unconscious while an abscess was opened. It has also been suggested that ether is rendered more effectual by combining its use with that of carbonic anhydride and even nitrous oxide has been used in combination with the expired air of patients, thus producing a mixed anæsthesia due to these two agents. Waller‡ has further shown that carbonic anhydride produced a brief abolition or diminution followed by prolonged augmentation of electrical excitability in the isolated nerve of frogs. This, however, is influenced by the amount of carbonic anhydride used. Expired air produces augmentation of excitability, while a large quantity of carbonic anhydride gives the result stated above, viz., primary abolition and secondary augmen-

* Compt. rendus, June, 1885.

† Lyman's "Artificial Anæsthesia," p. 327.

‡ Proceedings of Physiological Society, November, 1895 published in *Journal of Physiology*, vol. xviii. "Action of Anæsthetics on Isolated Nerve."

tation. The use of carbonic anhydride as a local anæsthetic, takes us back to the days of Pliny. But experiments have been undertaken which prove that carbonic anhydride possesses the power of producing unconsciousness only so long as the oxygen tension in the blood remains below a certain level. Gréhaut* employed mixtures of common air and carbonic anhydride, and found that when the animals experimented upon were completed narcotised, the gas of the blood contained 95·4 per cent. of carbonic anhydride as against the normal 34·3 per cent. (Pflüger†). Gréhaut's 'results had been obtained by Lallemand and Perrin as early as in 1860 ("Rôle de l'alcool et des anæsthetiques dans l'organisme," p. 405). This state of unconsciousness, however, is not one of anæsthesia and is only obtained at the expense of grave peril to the individual. The bodies commonly employed as anæsthetics—nitrous oxide, ether, chloroform—must then, differ in their action from carbonic anhydride. That this is so our present knowledge permits us to say, but compels us to admit that so far as many of our methods are concerned, anæsthesia is as Dastre‡ has said, the first step in a general poisoning of the organism. It is the realisation of the truth of this dictum which compels us at once to recognise the necessity of understanding the precise range of safety limiting artificial toxæmia, and to appreciate the responsibility falling upon those who undertake the control of producing and limiting it.

Theories of Anæsthesia.—In the early days of chloroform two very careful observers, Flourens§ and Longet|| were led by their researches to advance a reasonable

* Compt. rendus Soc. Biolog., 1887.

† Archiv. i., 285.

‡ "Les Anæsthetiques Physiologie et Applications Chirurgicales," p. 34.

§ Compt. rendus de l'Académie des Sciën., vol. xxiv., 1847.

|| Archiv. Général de Med., 1847.

enough theory. They asserted that the anæsthetics possessed a selective action upon the nervous tissues. Thus, if an anæsthetic was taken, it at once found its way to the nerve cells and produced unconsciousness. Other observers have believed that because *post-mortem* examination of the tissues of those dead after taking anæsthetics revealed the fact that the nerve tissues contained a somewhat larger proportion of the anæsthetic employed than other tissues, therefore this selective power was a reality. We now know the theory to be false and the reasoning fallacious, as the nervous tissues do not actually take up more of the anæsthetic, but retain more of it.

Mode of Action of Anæsthetics.—It then becomes a matter of very serious moment to ascertain in what way the anæsthetic enters the organism, what paths it takes, and by what means it is thrown off. Knowledge upon these points will enable us to ascertain how far anæsthesia trenches upon the vital processes of the organism. The lungs, the heart, and the brain have been called the tripod of life. Death, we know, must occur when the lungs or the heart cease to perform their function, but of the cerebro-spinal axis only the lower ganglionic centres are, even in mammals, essential to the existence of the animal. Hughlings Jackson* in his lectures on the evolution and Dissolution of the Nervous System, after pointing out that the evolution of the nervous centres is the “putting together of the nervous system,” and involves a correlation of the most automatic with the most voluntary—the automatic being through the necessity of the existence of the creature the most stable, and hence most highly organised, the most voluntary being open to constant change to meet environing necessities, and hence

* Croonian Lectures, 1884, in *Lancet*, March 29, p. 556; see also Lauder Brunton, who quotes Dr. Jackson, and applies his reasoning to the question of anæsthesia (*Lancet*, July, 1895, p. 84).

most unstable and less organised—goes on to show how dissolution is the reverse of this evolution, is, in point of fact, unpicking the lock of life. He adds: "In uniform dissolution the whole nervous system is under the same conditions or evil influence—the evolution of the whole nervous system is comparatively evenly reversed. In these cases the whole nervous system is 'reduced,' but the different centres are not equally affected.

"An injurious agency, say alcohol, taken into the system flows to all parts of it, but the highest centres being the least organised, give out first and most; the middle centres being more organised, resist longer, and the lowest centres being most organised, resist longest. Did not the lowest centres for respiration and circulation resist more than the highest do, death by alcohol would be a very common thing." If we replace the word alcohol by alcoholic anæsthetic in Dr. Jackson's remarks, we arrive at the pith of our subject.

It is, then, the sum and aim of the scientific use of anæsthetics to act upon the higher and more unstable centres of the nervous system without affecting the lower or automatic centres. But the problem cannot be narrowed down to this easily appreciated theorem. The inter-relations of the higher with the lower centres, in highly differentiated animals, are many and intimate. Dangers appear in every zone of narcosis, lest impulses become initiated which involve the stable centres through the unstable ones.

Under normal conditions the purely vital functions of life are controlled by the lower centres, and indeed in more humble animals are incapable of being influenced by higher centres. In man the cerebro-spinal axis can, and does, influence the processes of life in obedience to impulses from without which require some modification of the routine of life. The diver, for example, can control the automatism of his breathing; while under the influence

of pain, of shock, or of subjective fear of pain the heart's action may be inhibited. Such interference, however, is seldom excited without voluntary connivance. The simple reflexes of life are controlled when the higher centres are working in health. As soon, however, as any disturbance of these centres occurs through it may be an "injurious agent," as Dr. Jackson calls it, there is a danger and a very real danger lest simple stimuli from without cause the most widespread reflex actions. Even those protective of the vital processes become, when unrestrained by limiting nervous control, inco-ordinated and make for the destruction of those very processes of life which it is their function to preserve. And further, the due performance of the vital processes depends upon not only nerve impulses and viscera and muscles. It requires that these shall be in such a condition of vitality that they can perform their physiological duties. It pre-supposes also that these shall be able to meet unusual calls made upon them; if for example, the "injurious agent" at work, be an anæsthetic which produces a sudden fall of blood pressure for safety, the controlling centres of the organism must be equal to some re-adjustment by which this vascular depression may be counter-balanced. It also necessitates that throughout the whole time of the action of the injurious agent the tissues of the body shall receive their due quota of nourishment. This last essential implies that the blood stream shall be maintained pure in sufficient circulation, and capable of removing the products of tissue metabolism. A circulation capable of at once feeding and depurating tissues can only be one which passes through the lungs, and there becomes subject to those gaseous exchanges which occur in physiological life. Nor is the problem as yet clearly before us. Elimination of the injurious agent is at least as essential as the due control of those safeguarding vital processes against which it militates. Take chloroform, for ex-

ample. In persons whose chests are, through pulmonary emphysema, in a state of constant inspiration, the expiratory efforts are so ineffectual that the heavy vapour readily drops into the ever patent air cells, and there accumulates, until it reaches a tension which interferes with and threatens the mechanism of life. In the same way heart failure may occur in spite of a normally acting system of safeguards in the nervous system. If in response to demands made upon the heart by impulses from the nerve centres, that organ through disease is unable to execute the work required of it, fatal syncope arises.

All anæsthetics in common use enter the blood stream through the lungs. The inhaled vapour in passing over the pulmonary mucous membrane produces changes in its epithelium which according to McKendrick Newman and Coats* is inflammatory in character, "The capillaries are contracted, their walls become less distinct, and the blood corpuscles in them become partially dissolved." These changes are however, rendered less and less as the vapour employed is diluted more and more. It is probable that these effects are the result of an irritant as far as the epithelial cells and capillaries are concerned. The influence upon the corpuscles is, however, different, and furthermore, varies in the case of different anæsthetics. In every case blood removed from the body and shaken with an anæsthetic shows destruction of the corpuscles, and reduction with pouring out of the hæmoglobin. It would appear also that a similar if a less marked phenomenon occurs in the body. Da Costa† has demonstrated that "Etherisation produces a marked diminution in the hæmoglobin of the blood." He finds also that with destruction of

* Glasgow Commission on Chloroform, quoted by Lauder Brunton, *op. cit.* p. 85.

† "The Blood Alterations of Ether Anæsthesia," by Dr. J. C. Da Costa, *Medical News*, March 2, 1895.

the red discs, a change in the character of the leucocytes becomes apparent. I am at present investigating this point, and have up to the present time found that a decided diminution in the corpuscles takes place under nitrous oxide, ether and chloroform. It is, however, not improbable that factors other than the anæsthetics may be found at work in bringing about the result.

The combination or association between the gaseous anæsthetics or vapours and the constituents of the blood must be a loose one, since in their presence oxygen is displaced. Were they to form combinations as stable as that which carbonic oxide establishes, not only would the anæsthetic displace but would render it impossible for the reformation of oxy-hæmoglobin. Hence death must result. Whether or not, in certain conditions, the corpuscles have less power of again taking oxygen after prolonged anæsthetisation it is impossible to say. It seems that probably such is the case. Deoxydation of the tissues* at one time was thought to be the explanation of anæsthesia; we now recognise this is not so, for among other reasons we can produce profound anæsthesia with hyper-oxygenation, and many deoxidating bodies have no anæsthetic properties.

When it is remembered that the tissues are dependent upon the red corpuscles for their nutrition this question of their destruction by anæsthetics assumes a position of great importance. Hayem† has demonstrated that in anæmic and diseased states of the kidneys and liver the corpuscles are manifestly deficient in quantity and quality, and Haldane, working with Lorraine Smith,‡ has asserted that the corpuscles possess a different oxygen capacity. If, for example, one layer of these bodies can acquire and convey a certain

* "Practice of Artificial Anæsthesia," *Brit. Med. Jour.*, Sept. 19, 1885.

† "Du Sang," 1885.

‡ *Journal of Physiology*, vol. xvi., p. 468.

amount of oxygen to the tissues, another will carry more or less as the case may be. We have yet to learn how far pathological conditions affect this oxygen capacity of blood corpuscles. It is not impossible that the behaviour of anæsthetics towards the corpuscles, which it has been shown they affect so profoundly, may be such as to modify in a material degree their capacity for conveying oxygen to the tissues. The behaviour of anæsthetics towards corpuscles also illustrates a further and important point in our present consideration. There is a common tendency to accredit the central nervous system with absolute control over the vagaries of anæsthetics, to believe that if the ganglionic centres are keeping pace with the requirements of the organism that no fear of danger need be entertained. Certainly in the case of chloroform this belief is delusive. That body is a virulent protoplasm poison. Ether and nitrous oxide also act upon undifferentiated protoplasm, and all anæsthetic agents are able to influence living tissue, even when devoid of nervous connections.* Pickering working with the embryonic heart, has demonstrated that not only does chloroform act directly upon tissues out of nervous control, but so far differentiates between them as to affect them in various degrees. For while chloroform depresses the rhythm, causing diastolic stoppages of the auricle and ventricle, it proves itself much more toxic to the auricle than to the ventricle. Ether stimulates the embryonic heart, although very large doses will eventually stop it in diastole. The frog's heart, again, can be removed out of the control of the nervous system, and can be again and again stopped with chloroform or ether, and while it is often impossible to restore it in the former case, it is difficult to kill it when ether is perfused.

It must be then that these anæsthetics are able, quite inde-

* *Journal of Physiology*, vol. xiv., p. 446.

pently of the central nervous system, to act upon corpuscular and muscular tissue. Thiem and Fischer's research indicates that chloroform can produce a change in the heart muscle, which appears identical with fatty degeneration; while McWilliam* has proved that dilatation changes in the capacity of the heart as a whole, follow immediately on the inhalation of chloroform. These changes are also influenced largely by the actual quantity of chloroform contained in the blood as well as the length of time it has access to the tissues. It is further probable that the changes which we know take place as a result of alcohol, possess analogues in those brought about by other anæsthetics, and so that the nervous tissue is also structurally affected by them. Waller and others have demonstrated the changes in isolated nervous tissue, but as yet no full research has been conducted upon the nervous elements as they occur in the body. An attempt was made in this direction by me in working out the physiological action of nitrous oxide† with results which, I think, proved the anæsthetic properties of that gas. It must then appear probable that the changes brought about in the blood elements react upon the more stable tissues by lessening their supply of oxygen while the tissues themselves are brought under the influence of the anæsthetic which the blood stream conveys to them.

The next changes which are brought about by the anæsthetic are those connected with respiration, circulation, and nerve regulation. In obedience to stimuli conveyed from the lungs, diminution of the amount of oxygen or its excess lead to corresponding respiratory efforts. In association with these are the somewhat complicated series of changes in the blood pressure, the cardiac rhythm, the dilatation and con-

* *Journal Physiology*, vol. xiii., 1859.

† *Trans. Odont. Society*, 1887.

striction of the capillary areas which go to form the blood circulation. Not only may these be thrown out of gear by impediment to the pulmonary circulation arising from asphyxia, the commonest danger of anæsthetics, but may be profoundly affected from without through skin or visceral stimuli, leading to disaster. Oliver* by means of his ingenious instrument, the arteriometer, is able to record changes in the size of the blood vessels under various circumstances. He very kindly assisted me in some observations made at University College Hospital, and we found that during various stages of anæsthesia, the pulling upon the intestines, the spermatic cord, &c., incident to various operations upon viscera, produced the most startling changes in the diameter of the radial artery. This must indicate a profound series of impressions upon the control system. To my mind, many disasters under anæsthetics are explicable by these observations. Under chloroform especially, the shock conveyed by the removal of a tooth would, if the anæsthesia were not deep, in a certain number of cases, produce reflex inhibition of the heart. That this reflex inhibition does occur, has been proved by many observers, but the results of Amrus and Gärtner† are conclusive. Even when the animal is deeply anæsthetised, they found weak faradic currents applied to the vagus produced a very prolonged heart-stoppage. When the heart-pause had persisted for a certain time, respiration also failed, slight spasms succeeded.

In the paper to which I have referred above, Lauder Brunton insists upon a form of death under anæsthetics, which is certainly a common one, and which, when recognised, must relieve anæsthetics of responsibility in very many fatalities. Adopting Caspar's views he attributes these deaths to neuro paresis.‡ Not only do circulation and respiration fail simul-

* "Pulse Gauging," 1895.

† *Wiener Med. Blätter*, Mo. 20.

‡ "Neuroparesis," Lauder Brunton, *Lancet*, 1895, vol. ii., p. 23.

taneously, but all the nervous centres are instantly annihilated. The death is one of shock. It may follow surgical shock ; it may and does result from pain felt during imperfect anæsthesia, or even before any appreciable amount of the anæsthetic has been taken. I think a study of the cases of fatalities published will convince you that a large number of examples of death result from neuroparesis.*

Anæsthetics are, however, not simply dangerous *per se*. They too frequently have to be given to those whose tissues are already in a diseased condition. Take anæmia, fatty degeneration, "renal inadequacy," various functional and organic diseases of the ganglionic centres—of the heart—and cyanosis, the result of obstructive pulmonary or cardiac diseases, as examples of the many pathological states which place a patient, even before taking an anæsthetic, in a condition which renders him especially liable to suffer from such phenomena—caused by anæsthetics—as destruction of corpuscles, irritative inflammatory changes in the epithelium of the lungs and kidneys, fatty changes in the heart, regular and uncontrolled nerve storms. All such people must take an anæsthetic. And until we are fully alive to the way in which the several anæsthetics act upon persons so diseased we can neither select with accuracy nor control with precision, but must content ourselves with empiricism.

What, then, are the practical lessons our present knowledge teaches us ? In general we must conclude that the action of the anæsthetic should be restricted within those clearly defined limits which involve only the higher ganglionic centres ; that under no circumstances should incomplete anæsthesia be deemed sufficient for even the most trivial operation.

* See *British Journal of Dental Science*, "On Nitrous Oxide Anæsthesia," Oct. 1 and 15, 1895 ; also "Clinical Report of Deaths under Chloroform," *Lancet*, 1893.

Of methods, our present knowledge allows us to say much, but it is impossible for me to do more than indicate in the briefest way what rules should guide us. All methods involving asphyxial symptoms are open to grave censure. In the case of all anæsthetics it is possible to produce unconsciousness, and yet to avoid cyanosis. Nitrous oxide, once thought to be an asphyxiant, is now known to be a true anæsthetic, and to be capable to being given with oxygen or air, and to produce peaceful anæsthesia without any asphyxial phenomena. Of ether the same is true. Of chloroform it must be said that any association between it and asphyxia, must lead in the healthy subject to grave peril, in the diseased to fatal results.

A word further. Close study of the behaviour of anæsthetics makes me certain that all methods which employ a large quantity of anæsthetic substances are faulty. The pneumonia, the renal catarrh, the cardiac asthenia following anæsthesia are due, in most cases, not so much to the anæsthetic as to the unwary way in which it is employed.

When anæsthesia is better understood, and those who employ anæsthetics recognise more the responsibility they incur; when the Examining Boards demand of their candidates at least a nodding acquaintance with anæsthetics and their uses, then will there be fewer fatalities and more common-sense practice of this branch of the healing art.

PROSECUTION UNDER THE DENTISTS' ACT.—R. Hamer has been summoned at Burnley for using the title of Dentist contrary to the 3rd Section. William Edward Allanson acting on instructions deposed to visiting defendant and giving him certain work to do. He went twice, saw him extract a tooth and received a receipt and certain cards which had the word "Dentist" upon them. Mr. Sutcliffe, in defence, said it was quite clear that for some time the defendant had exercised the calling of a tooth extractor, &c., in all its varied details as carried on by a Dentist. He could not deny that he had been so injudicious as to send out printed cards which had words upon them indicating that he was a Dentist. The defendant was fined 40s. and costs.

ORAL SURGERY.

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Eng.

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(Continued from page 155.)

LEONTIASIS OSSEA.

Leontiasis ossea is the name given by Virchow to a curious condition in which the bones of the skull and face become greatly deformed by the development of irregular growths of bone. This condition has also been named Diffused Hyperostosis.

The disease usually begins in young subjects. In some cases its onset has been marked by pain and swelling of the face or by other inflammatory symptoms following upon an injury or exposure to cold. In other cases the disease has begun and progressed insidiously, without any discoverable cause. As the bony growths increase in size, the features become hideously distorted, the eyes being displaced and sometimes destroyed by pressure, and respiration and mastication are greatly impeded by the invasion of the nasal and buccal cavities. The disease may last for many years, death eventually resulting from emaciation or from some intercurrent affection.

On examining the skull of a patient who has suffered from this condition the bones are found to have become greatly changed. The disease may be of limited extent, perhaps only affecting one maxilla, or it may involve all the bones of the skull and face. The affected bones present a coarse tuberculated surface and are studded with rocky shapeless outgrowths projecting into the orbits, nasal cavities, and mouth, as well as upon their external surfaces; these out

growths sometimes assume considerable size forming tumours which may project as much as three inches from the face. In the specimen depicted in Fig. 48 the mandible is scarcely affected, but in some cases it may be so much enlarged that its ramus or body measures five inches or more in circumference.

On section the bones are found to be composed of uniformly hard and dense but finely cancellated bone ; the



Fig. 48.—Leontiasis ossea. (*Museum of St. Mary's Hospital.*)

maxillary frontal and ethmoidal sinuses may be completely filled up with bone so that no trace of these cavities can be found ; the sockets of the teeth may be similarly affected.

Microscopic examination shows two kinds of bony tissue, the one compact and the other cancellous. The compact tissue does not differ much from the normal structure, but the cancellous tissue shows large irregular spaces somewhat resembling primary bone ; there is but little trace of lamina-

tion, the lacunæ are very numerous, small and arranged irregularly; definite Haversian systems are for the most part absent.

With regard to the etiology or pathology of leontiasis nothing is known.

The treatment is very unsatisfactory. Drugs are useless although some surgeons think that benefit may be derived from the prolonged administration of iodide of iron.

When the disease is of limited extent, affecting only one bone, or giving rise to one or two definite excrescences, the surgeon is justified in removing the affected parts by operation; but the proceeding must be regarded as palliative rather than curative.

ACROMEGALY.

Acromegaly is characterized by great overgrowth of the hands and feet and deformity of the face. The legs and forearms are not usually enlarged. The spine often presents a posterior curve in the dorsal region. The skin is thick and sometimes warty, and the hair may be unusually long and coarse. The cranium is often enlarged, especially in its antero-posterior diameter. The jaws, especially the mandible, are nearly always enlarged. In the patient from whom the accompanying illustrations were taken, the lower wisdom teeth were 2.8 cm. further apart than the corresponding teeth of the upper jaw, and the lower incisors were 1.7 cm. in advance of the upper teeth. The nose is increased in size, the lips are thick, the lower one having a tendency to protrude and hang down; the tongue is large and soft, and presents ridges and furrows on its upper surface.

This disease affects persons of either sex, and has been most often observed between the ages of twenty and forty. The subjects of this disease often complain of headache and

general lassitude, and the speech is usually thick and slow. In women the catamenia are nearly always suppressed.

The pathology of acromegaly is not at present understood. All the tissues of the affected parts are equally overgrown ;



Fig. 49.—Patient affected with acromegaly, showing enlargement of hands, mandible and lips. (*Partsch*).

in the hands and feet the bones are enlarged as well as the soft parts. In several cases which have been examined post mortem the pituitary body has been found enlarged, atro-

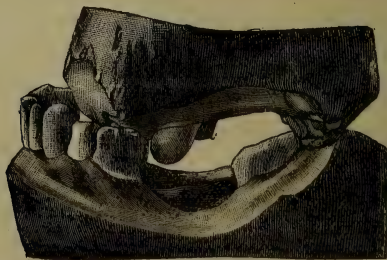


Fig. 50.—Cast of the Jaws of patient shown in preceding figure. (*Partsch*.)

phied or affected by a new growth, and pathologists are inclined to think that disease of this body is an essential factor in the production of acromegaly ; in some cases the

thyroid gland, thymus or sympathetic nerves have been diseased, but it is not known at present whether these conditions are causal or casual.



Fig. 51.--From the same patient showing enlargement of tongue, (*Partsch*).

No treatment is of any special use.

OSTEITIS DEFORMANS.

This is a very chronic form of inflammation of bone, occurring in old people. The affected bones become increased in size and bent. The disease affects the bones of the cranium and the long bones; those of the face and of the hands and feet are unaffected. The distribution of the disease is therefore in a sense complementary to that of acromegaly, from which it may be readily distinguished. Nothing is known as to its cause, and no treatment hitherto used has been found to do any good. The disease is briefly noticed here to distinguish it from leontiasis and acromegaly.

ACTINOMYCOSIS.

Actinomycosis is a disease which results from the introduction into the body of a vegetable organism called *Actinomyces*. This organism appears to grow naturally upon

barley or corn, and for this reason the disease is much more common among cattle than in man. Actinomycosis of the tongue and jaws of cattle has been long known to veterinary surgeons, but it is only during the last fifteen or twenty years that its pathology has been understood, and its occurrence in man recognized. The manner in which the parasite enters the body varies in different cases ; sometimes particles of barley or corn have been found at the seat of affection. In man the disease may begin in the mouth, in the intestines, in the lungs or in the skin. Wherever the parasite establishes itself in the body it gives rise to inflammation and the formation of a large amount of granulation tissue. In some cases the granulation tissue becomes converted into fibrous tissue forming a definite lump or tumour. In other cases the inflammatory process goes on to suppuration, abscesses are formed and discharged and a fungating mass of granulation tissue and parasitic growth protrudes on the surface.

Although the parasite may lodge in almost any part of the body, the jaws are the structures most frequently affected. The parasite usually gains access to the pulp of a carious tooth and gives rise to a train of symptoms resembling those of alveolar abscess. The inflammatory swelling slowly increases, so that in a few weeks a definite tumour has formed. When the maxilla is affected the tumour bulges at some part of the cheek ; when the mandible is the seat of the disease the swelling is most often found at or near the angle of the bone. The tumour, which is fixed to the jaw, is at first hard and subsequently softens so that fluctuation may be obtained. Eventually the swelling bursts on the face or into the mouth, discharging a turbid serous fluid in which are suspended very characteristic small yellow granules, consisting of masses of the parasite.

On passing a probe into the sinuses bare bone can be readily detected. The skin and subcutaneous tissues of the

face and neck become diffusely infiltrated and the submaxillary lymphatics may inflame and suppurate, The progress of the disease is accompanied by a certain amount of febrile disturbance, the temperature varying with the freedom of the discharge. After a longer or shorter time the prolonged suppuration leads to emaciation or even to lardaceous disease. In some cases the disease assumes a pyæmic form and metastatic deposits take place in the internal organs. As a rule the disease is chronic lasting one or two years, but in some cases death occurs in a few months. The prognosis seems to be worse when the maxilla is affected than when the mandible is the seat of the disease.

On examining the mandible after death or after removal, it is found to be expanded and hollowed out by a number of cavities opening on the surface by large cloacæ. (Fig. 52).

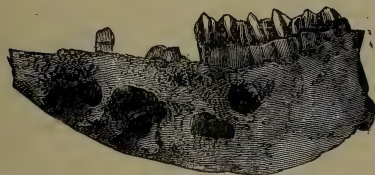


Fig. 52.—Macerated mandible from an animal affected with actinomycosis. (*Museum Royal Free Hospital.*)

These appearances are best seen after the bone has been macerated to remove the soft parts. In the recent state these cavities are filled up with a soft honeycombed whitish mass, composed of granulation tissue and parasite. On microscopic examination this granulation tissue is found to contain a number of small radiate masses which are minute colonies of actinomycetes. The centre of each colony (Fig. 53) is composed of extremely fine interlacing threads and small round bodies resembling cocci; the periphery is composed of club-shaped

bodies which are the enlarged bulbous ends of the threads. These club-shaped bodies are the most characteristic feature of the parasite, but they are not an essential part of it, being probably only the swollen and degenerated ends of the thread or filaments (so called involution forms). The threads are best seen in pus (Fig. 54). They are long and delicate ;



Fig. 53.—Actinomyces in granulation tissue, showing rays and clubs.
(From a Photo-micrograph.)

they often branch dichotomously and contain a number of round bodies like cocci. They are the actively growing and essential part of the parasite. Actinomyces has been cultivated outside the body and the disease has been reproduced by injecting the artificial cultures into animals, thus proving that the parasite is the cause of the disease.

Treatment.—As soon as the diagnosis is established a free incision must be made into the affected parts, and all the soft granulation tissue thoroughly scraped or gouged away,

the cavity in the bone being treated in the ordinary manner. Iodide of potassium in large doses has a marked effect on the



Fig. 54.—Mycelial form of *Actinomyces* in pus.
(From a photo-micrograph.)

growth of actinomyces and should be prescribed more especially if it is found impossible to eradicate all the diseased times surgically.

To be continued.

A PLATE LICENCE for DENTISTS.—We have been shown a notice, served by an officer of the Inland Revenue, which directs attention to the requirements of the law with reference to Licences to deal in gold and silver plate. After numerating the rates of Duty specified in various cases, it states that Licences are required to be taken out not only by those persons whose trade is ostensibly in gold and silver plate, but also by tradesmen who sell articles to which gold and silver weighing more than two pennyweights or five pennyweights respectively is an accessory or ornament. The term "gold" does not mean pure gold but a mixture of pure gold and alloy.—What dentist will plead guilty to being a tradesman?

AN ADVENTURE IN TOOTHLAND.

By SYDNEY HARRISON.

It happened this way. I was working on a six-year old molar, trying to find the root canals. Tired I was, perhaps sleepy, but certain it is that I suddenly saw, perched on a corner of the tooth, a little manikin.

"Come inside," he said, "you will be able to see better, besides, we are having a meeting, and you may be able to give us some information."

"Nothing would give me more pleasure," I replied, "but I am rather too big, I fear."

"Not at all," he answered, "come along, follow me."

It was not until I began to do so, that I discovered I had become as small as he.

On entering, I found myself in what appeared to be a large cave; huge boulders hung from the sides which were of beautiful colour; one thing I noticed in particular, namely, that there were numerous roads leading from the cave all of which seemed to run in much the same direction.

My host led the way down one of these turnings; just as we turned I noticed a queer little being sitting on a rough projection; he was evidently in great distress. I asked my friend who he was and what was the cause of his grief? "Oh!" he replied, "I've no patience with him, he and his family are always undermining the constitution of our country; they are a foreign race, and more properly belong to your sphere than ours; they do not care for our homes, but prefer to live in caves—like that you passed through just now—which causes our King Papilla great pain."

"Why," I asked, "do they prefer the caverns?"

"Simply greed," he answered, "for they live and work in

the hope that their caves may be filled with gold. Mr. Lep-tothrix, who we have just passed, is sorrowing because, instead of gold, he has found some more common metal in a cave he has spent some years in making."

As we walked, the little manikin told me his name was O Dont O'Blast, and that he belonged to King Papilla's army, a body who were constantly working to protect the king from the attacks of foreign powers. The conversation drifted, and my friend asked me if I was tired ; I had to admit I was, so he suggested we should finish our journey by train. "Ah!" said he, "I see you are surprised at our having trains, but I venture to think our system of lines are more perfect than yours ; we have several going right round the country ; there," he said, pointing to the left, "are the lines of Schreger, and close to them are the lines of Owen."

I could not see the difference between them but, doubtless to his experienced eye, it existed.

We soon arrived at the palace of King Papilla, who lived in the centre of his people, and I learned he was related to my friend Mr. O'Blast. The king was a *sensitive* man, and took great interest in his people and country, over which he had a most complete telegraphic communication coming from all parts to a central station in the palace, situate just under those apartments occupied by O'Blast, and presided over by a Mr. Stellate Cell.

Later on I was taken by Mr. O'Blast to the meeting where a great debate took place as to the owner of certain sheaths ; some said they belonged to a Mr. Neumann ; others, to a Mr. Kolliker, and others, that the former gentleman stole them from the latter, whilst one member doubted if the sheaths existed at all.

After the meeting was over the king wished to see me privately, putting many questions to me.

Was it true, he asked, that Mr. Tomes had a father ? Did

I think—? Just at that moment a messenger entered with the news that a bottle of arsenic had been found in the palace.

“A plot!” cried the king, and fainted. In the confusion which followed, I left the palace. Just outside I noticed a large placard on which was written in red letters—

“TERRIBLE MASSACRE!

MR. STOCKEN BUTCHERED.”

This reminded me that I had to attend a lecture early in the morning, so I hastened back to the apartments of Mr. O'Blast; as I hurried, my foot caught on a stone and I was thrown violently down.

When I awoke I was in bed.

THE USE OF PHOSPHATED OIL IN DENTISTRY.

BY HERMAN PRINZ, Halle.

Phosphated Oil is a sovereign remedy for removing violent pain in periostitis resulting from a carious tooth. The cavity should be cleaned and dried and a few drops placed on cotton packed in the tooth, and is held in place by gutta percha. The pain will vanish in a few minutes. It can be kept in the cavity for days and weeks to the greatest comfort of the patient. The action is not well understood, but Dr. Albrecht claims it is due to the fatty degeneration of the tissues brought upon by the phosphorus in this form. Phosphorated oil is prepared by dissolving one part of dried phosphorus in about eight parts of heated pressed oil of almonds.

The Ohio Dental Journal.

British Journal of Dental Science.

LONDON, MARCH 16, 1896.

ADVERTISING.

A recent case of alleged libel tried at Manchester before Mr. Justice Kennedy and a special jury, affords a good instance of the difference of opinion which exists as to what constitutes unprofessional advertising. The plaintiff, a medical man in Blackpool, had long been connected with a hydro-pathic establishment where a consultation-room was set apart for him. He was also physician to a similar institution in another part of the town, where it seems that at the request of the proprietors he had consented to the fixing of a brass plate outside, bearing his name and qualifications. His name also appeared upon prospectuses. In 1895 a new proprietor of the first-mentioned establishment invited tenders from duly-qualified doctors for the privilege of daily attendance with a room for consultation. It was also provided that any inmate was to be free to select any medical attendant from outside. In commenting upon this circular the *British Medical Journal* intimated that any medical man responding to it would depart from the traditions of the profession. The circular was withdrawn. Later, in January, "X.Y.Z." wrote to the journal to ask whether it would be regarded as infamous conduct or censurable if he allowed his name to appear on the prospectus of a large hotel as its physician. The editor stated his opinion to be that such a course would be regarded as covert and unprofessional advertising and would involve severe criticism and rebuke. Still later, under the heading "Hotel Physician" it was stated that "the medical man in question has not only disparaged the honourable traditions of the medical faculty, but contravened the well-understood rule of modern

practice. Need we add that so reprehensible a departure from professional rule, in face, too, of the protesting dissent of the local practitioners, and in the absence, moreover, of our (self-) solicited opinion, the expression of which was unavoidably delayed for a week, is wholly incompatible with the honour and dignity of the profession, and justly subjects him to medical reprobation." There was no dispute that the plaintiff was the person referred to, hence the action for libel against the editor. Medical evidence was given on his behalf that he had not done anything in contravention of the best traditions of the profession or of any rule. On the other side Sir DYCE DUCKWORTH had no doubt that the circumstances amounted to a violation of a well-known rule. In cross-examination, he did not object to his own name and qualifications appearing on the prospectus of an insurance company. Sir WILLIAM STOKES who followed on the same side, was invited to express his opinion upon Sir Dyce's admission, and after additional evidence for the defence and the judge's summing-up, the jury found a verdict for the plaintiff with £150 damages.

It is true that there seems to have been some comment as to whether the local practitioners did protest, but we suppose it may be understood that according to the finding of the jury, practitioners may now imitate the plaintiff's lead with a clear conscience. So that in the definition of what is not unprofessional advertising one step has been gained. It only remains for a series of other cases to be tested in order to settle the long-disputed question, but perhaps such a method is hardly to be hoped for. Some Dentists look in the direction of the General Medical Council for a solution, and it may not be out of place to refer again to its announcements in regard to this matter. In December, 1893, Mr. BRIDENELL CARTER proposed that it should be declared that the publication of a scale of charges, or the issue of advertisements containing claims of superiority over other practitioners, or unfair depreciation of them, would be regarded as an offence with which the Council would be prepared to deal, and which might easily

be carried so far as to constitute infamous or disgraceful conduct in a professional respect. This appears a tolerably clear definition which suggests how much advertising might be done without fear of trouble, but it was somewhat discounted by an after-remark that such declaration "practically bound the Council to nothing more than to consider any charge of objectionable advertising brought before it, together with issuing a warning that such advertising was so objectionable as to call for a penalty." Sir DYCE DUCKWORTH seconded the proposal, but Dr. MAC-ALISTER wished for a legal opinion. The Registrar said that the Council's lawyer had made a statement before the Executive Committee, and that, so far as he remembered, it was to the effect that the Council could hardly take it up and declare it to be infamous in a professional respect. The "definition" was then referred to the Executive Committee for submission to the legal advisers. In May, 1894, Mr. B. CARTER said that the original motion was calculated to commit the Council beforehand to a course of action; if they could steer clear of that "they would no doubt be safe." The "warning," which was afterwards agreed to and published, consequently did not contain a statement that the Council would be prepared to deal with the offence described, and another notable alteration was the deletion of the reference to a "scale of charges" which may, however, perhaps be included in the words "advertisements of an objectionable character." Who knows? Indeed, many will not care, until we are informed that the Council is prepared to act. As we have frequently said, we are, of course, strongly opposed to advertising, and shall welcome an authoritative definition as to what is objectionable, and what may then be considered allowable by the process of exclusion. Are we, however, to be left without further hope? According to the *Medical Press*, there is no scintilla of law or rule to make advertising by professional men "infamous," "and the General Medical Council has no more power to make it law than this journal has."

CHLOROFORM FOR DENTAL OPERATIONS.—In commenting upon one of the fatal cases recorded on another page, *The Lancet* emphatically denounces the routine practice of many practitioners in resorting to chloroform for extraction. The account of this case given in the press also astonishes us by stating that a youth of fifteen required *eleven* teeth to be taken out to qualify him for admission to the Royal Navy. Professor Purser has recently made a communication to the Royal Academy of Medicine in Ireland on the stoppage of respiration which sometimes follows stimulation of the peripheral end of the pneumogastric nerve, and he pointed out that this event might explain certain cases of sudden death which were often attributed to primary stoppage of the heart as in death from the inhalation of chloroform. If this drug is to be used for extractions it would seem very necessary to have a profound anæsthesia in order to avoid anything like shock.

HEREDITY IN HARE-LIP.—In an interesting paper read before the British Medical Association, Mr. William Sedgwick alludes to a communication by Dr. Allan Jamieson on "Cleft Palate and Incisor Teeth." In this it is stated that "among the children and grandchildren of four brothers cleft palate occurs in two, while others present peculiar anomalies in their permanent upper incisor teeth." In the son (K. M.) of the first brother there was harelip of the right side and fissure of the hard palate extending through the uvula and soft palate, and no trace of a right lateral incisor tooth. In the son (D. M.) of a second brother there was simply an oval aperture in the velum palati. In the son (C. M.) of a third, as well as the son (R. M.) of a fourth brother, the defect was limited to congenital absence of both lateral incisor teeth; and there was the same defect in a grandson (D. M.) of the last-mentioned brother. Mr. Sedgwick points out that, as not infrequently happens, there was in this, as in some other hereditary cases, a progressive diminution in the amount of congenital deformity.

THE NEW PHOTOGRAPHY.—Professor Koenig, of Berlin, has photographed a femur with a sarcomatous tumour by means of Roentgen's method. He found that the parts where the osseous tissue had been destroyed by the growth were much less opaque than the normal bone in the photograph, and in this way he was able to estimate the extent of the growth. In *The Lancet* laboratory they have been using a vacuum tube provided with a platinum disc at an angle of 45 degrees as the anode terminal. This apparently serves to reflect the "x" rays directly on to the photographic plate and is much more rapid than any tube previously in use. Mr. Keevil has published in the *British Medical Journal* some astonishing results which he obtained by using an ordinary incandescent lamp in which the filament was broken. Unfortunately the new method does not promise much in dental work owing to the peculiar structure of the teeth and their implantation in bony sockets.

THE LONDON HOSPITAL.—By the retirement of Mr. Ashley Barrett a vacancy in the post of Dental Surgeon was created, and applications invited in the usual manner, the diploma of membership of the Royal College of Surgeons being one of the essentials. Just before the date of the election, however, the regulations appear to have been altered, and another announcement declared that the post was open to those holding the L.D.S. diploma. We hear that a very large number of candidates entered the lists and considerable activity was manifested in paying courtesy visits to the members of the Staff, and in acquiring testimonials. It is probable that the members of the Committee of the Hospital have heard a good deal more about dentistry during the contest than had hitherto fallen to their lot. No doubt every effort was made to impress their minds favourably, and in one instance we are credibly informed that a very strong candidate did not hesitate during his peregrinations to break through his habit of wearing his

customary artistic, hygienic, and comfortable head-gear, but actually submitted to the infliction of the orthodox silk top-hat.

DEHYDRATING FOR MICROSCOPICAL WORK.—Dr. Chigwell has shown to the Royal Microscopical Society a new apparatus, attached to a board and easily carried about, for dehydrating tissues before embedding in paraffin. Pieces of tissue that had been soaking for seven days were perfectly dehydrated in as many hours. The apparatus consists of a metal vessel connected by a tube to a condensing arrangement, so that the mixture of alcohol and lime could be distilled and the spirit fall upon the tissue. An ingenious contrivance ensures the spirit being carried back to the still, so that the process is continued automatically.

IODINE AND THE THYROID GLAND.—Iodine is an old-fashioned remedy in diseases of the thyroid gland, and now Professor Baumann of Freiburg, has found out something by chemical investigation which seems to throw some light upon the use of this drug in such conditions. From the thyroid gland of the sheep he has obtained a product which is an iodine compound. Thyro-iodin is described as an amorphous brown powder, almost insoluble in water and readily soluble in alcohol. It is readily dissolved by alkalies and is again precipitated on adding an acid. When heated, it swells up and gives off an odour of pyridin. Thyro-iodin does not give any of the reactions of albumin; it always contains phosphoric acid corresponding to 0.4 or 0.5 per cent. of phosphorus, and possibly it may be a product derived from the nuclein acids of Kossel. By repeated purification a product has been obtained containing no less than 9.3 per cent. of iodine, but the proportion of phosphorus was not equally increased. Examination of the human thyroid gland showed that it contains a similar iodine compound in the normal condition, whereas in cases of goitre the amount of iodine appeared to be smaller.

Abstracts of British & Foreign Journals.

ELECTRICAL ACTION BETWEEN METAL FILLINGS.

By J. L. ASAY, M.D., San Jose, Cal.

A year or more ago it occurred to me that there could be a telephonic communication induced by the two electrodes consisting, respectively, of gold and amalgam in the presence of moisture by the closing and breaking of the electrical circuit. Repeated tests under various conditions have confirmed this opinion. An electrical current existing between different metals in the same mouth is capable of being demonstrated by a little apparatus which I have had made. It consists of a receiver of the ordinary telephone, with conducting cords of about five feet in length. To the end of each is attached an ordinary excavator with the point tapered and bent at an obtuse angle (the latter for convenience only in reaching a filling). These excavators serving as terminals, one is brought in contact with an amalgam filling, the other with one of gold, when the sound produced by the current can be distinctly heard through the receiver at the ear.

An illustration of the sound thus produced can be given by connecting the instrument with the poles of a dry cell or battery, when the distinct "click," "click," as the circuit is closed and opened, is plainly audible to any one, even if somewhat hard of hearing. In the demonstration in the mouth, however, the current not being so strong as in a battery or cell, this volume of sound is greatly modified and often requires acuteness to hear it. The insulation of fillings by oxy-phosphates, or other non-conducting materials, still further reduces the current and diminishes the volume of sound, if not being entirely prohibitive of electrical action.

There is a difference of opinion among electricians with whom I have conversed regarding the existence of electrical action between gold and amalgam fillings when the two metals are joined. Some assert that no current can be found under such condition; others, that it is a mere short circuiting of a battery. In the voltaic pile we say there can be no electrical action set up where the plates are in close contact, and that there must be an interval of space between the plates filled with an acidulated fluid in order to induce a circuit. What

really does happen when gold is built upon an amalgam filling I am not prepared to assert, owing to this diversity of opinion among those who are more conversant with this science than myself. I would suggest one fact, however, that one or more surfaces of both metals, as usually placed in the mouth, are continually bathed in the oral fluids.

In years past, and, also lately, I have had occasion to make many of these so-called combination fillings, and my experience has been and is, that when I have made a gold filling with all the care and detail possible for myself upon a cervical foundation of amalgam, I have invariably found, in a year or more afterward, the gold roughened and softened at the line of junction with the baser metal, although such margin was absolutely solid and nicely finished at the completion of the filling.

The Pacific Stomatological Gazette.

TRIGEMINAL NEURALGIA AND NASAL DISEASE.

By MAYO COLLIER, F.R.C.S.

Within the last twelve months two cases of severe and persistent facial neuralgia that up to then had defied all treatment have come under my care; they were referred to me by my colleagues, Dr. Guthrie and Dr. Cagney of the North West London Hospital. I have postponed till now publishing an abstract of these cases in order to try the validity of the cures by the test of time.

The first case was that of a man aged fifty who was for some time under the care of Dr. Turner, of the Hospital for Epilepsy and Paralysis, Regent's Park, and I am indebted to him for the early notes of this case. In short, this man had suffered severely for the last four years, and latterly the frequency, duration, and intensity of the attacks had made life almost unsupportable. An examination of the nasal cavities revealed extensive disease of the middle turbinated bone on the right side. The removal of this resulted in almost immediate as well as permanent and complete cure. The second case, that of a female, aged thirty-eight, kindly sent me by Dr. Cagney, was on all fours with the man's case, only of longer duration, (twelve years) and at times greater intensity. An examination here revealed disease in the same

situation, and the same fortunate result followed its removal. Of the many recorded cases of trigeminal neuralgia I find few attributed to nasal disease, but taking into consideration the wide distribution in the nasal cavities of the many branches of the nasal ganglion on the second division of the fifth nerve, it is not surprising that a considerable number of these cases are, in fact, due to irritation in one form or another of the branches of this nerve in the nose.

The Lancet.

WHITE BREAD OR BROWN BREAD.

The Lancet says that the quality of the flour from which bread should be manufactured has been the subject of considerable discussion lately, not only in this country, but also in France and on the continent generally. In a recent number of the *Revue d'Hygiene* Dr. Vallin has an article in which he deals with the matter at length and in great detail. Although far from being a partisan of very white bread, which he believes to be less nutritious than the brown variety, the author is still less an advocate for *pain complet*, that is, bread made with flour from which nothing but the outer husk of the grain has been removed. Bread thus manufactured he regards as decidedly unwholesome, on account of the large amount of indigestible bran it contains. In small quantities it may possibly be useful as a stimulant to people whose intestinal functions are sluggishly performed, its effects in such cases being similar to those of mustard, but if employed exclusively it is likely to set up gastric irritability and catarrh. The conclusions which Dr. Vallin finally arrives at are thus shortly stated. White bread may be recommended to gourmets and such as live on the fat of the land; home-made bread to working men, soldiers, growing youths of both sexes, and pregnant women; *pain complet* is only fit for dogs, or occasionally as a remedy in constipation. Generally speaking, these conclusions are sound enough, but it must not be forgotten that the wheats of different countries vary considerably *inter se*, and are by no means all equally digestible when made into flour. In some grains it is necessary to remove the whole of the envelopes, while in others slight decortication suffices.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary monthly meeting, January 13, 1896. Mr. David Hepburn, L.D.S. Eng., President, in the chair.

The minutes of the previous meeting were read and confirmed.

The following gentleman was elected a non-resident member of the Society:—Henry Bambridge, L.D.S.I., 27, King Street, Great Yarmouth.

The following gentleman was proposed as a non-resident member of the Society:—Harold Dewe Matthews, L.D.S. Eng., Grove Field Villa, Cheltenham.

The Curator stated that he had received from Mr. W. B. Burrows four old bone plates with natural teeth mounted upon them, and also a similar lower plate presented by Mr. Murray Davis. The Society was greatly indebted to these gentlemen for their donations, as such specimens became rarer every year.

Mr. Aubrey Farebrother had been kind enough to send a vulcanite plate of very primitive workmanship, and he had also sent four upper incisors from the mouth of a patient of his. Three of these teeth were very deeply grooved at the necks on the labial aspect, but the right central was only slightly eroded.

It was commonly stated that erosion did not occur in dead teeth, and it certainly looked as though there had been some special retarding influence at work to protect this tooth, while those on either side, and in immediate contact with it, were so deeply affected.

To Mr. Morton Smale they were again indebted for two most interesting specimens of comparative dental pathology. The first was the skull of a black antelope (*Cephalophus niger*), the upper anterior grinding teeth of which were much worn, while a large inflammatory cavity surrounded the roots of the left upper first molar.

Mr. Smale's second specimen was the skull of a Panolia deer (*Cervus eldii*). The alveolar margins were extensively absorbed, forming cup-shaped cavities around the roots of the molars. The cavities during life were probably occupied by

thickened vascular periosteum, such as was met with in cases of pyorrhœa alveolaris.

The PRESIDENT said the thanks of the Society were due to the donors for these very interesting specimens.

Mr. GARTLEY presented a model showing supernumerary teeth.

The LIBRARIAN reported that he had received the usual periodicals.

Mr. MUMMERY showed specimens of ivory, which were, he said, of considerable interest. One was part of an elephant's tusk, showing a very large pulp-stone, occupying the entire width of the pulp cavity. It was possible that some foreign body had formed the nucleus of the pulp-stone, but he had not yet been able to have it properly sawn through for inspection. He also showed a very interesting specimen of ivory given him by Professor Miller, of Berlin. It was a section of a tusk taken from an Indian elephant. The animal had been moved from one part of the country to another, with a consequent change of food. A ring of green stain would be seen in the section which was concentric with the pulp cavity, and was evidently due to some vegetable substance in the food, which stained the ivory in the same manner as madder stained growing bone. The width of the ring indicated about a year's growth of the tusk. The animal had probably been then removed to some other district, where this colouring matter, whatever it might be, was not contained in the food, and the ivory subsequently formed was normal in colour.

The FOREIGN SECRETARY then read a communication forwarded by Dr. Dentz, of Utrecht, entitled "An Anomaly of the first upper Temporary Incisor, and its Morphological Significance":—

Deformities of any part of the body give rise to the question: (1) How have these deformities originated? and (2) Are we really entitled to call them deformities?

It must first be settled whether, in every concrete case, the word *deformity* is a well-chosen term, and whether the deviation from the normal form has no other significance, either of *atavism* or of *reduction*.

In which cases are we entitled to speak of *atavism*, when anomalies of form come under observation: in which cases only of deformities depending upon disturbing influences— influences which we may accept hypothetically, but the accuracy of which is seldom demonstrated?

The answer to this question is, I think, that if the anomaly

of any organ is repeatedly observed, if the anomalies show a certain regularity, we have no longer any right to look for external disturbing influences, but in these cases we must assign another meaning to the anomaly.

I have sometimes observed an anomaly of this kind in I^1 D (the first deciduous upper incisor), an anomaly which struck me by the regularity of its appearance, and which, at first, I was at a loss to interpret.

The anomaly under consideration is this: I^1 (deciduous) is very broad in its labial surface, and shows a more or less pronounced indication of being split along its longitudinal axis. On its lingual surface, where the splitting is also discernible, we notice a pointed prominence covered with enamel, a kind of enamel growth very much resembling a small tooth, or rather a reduced form of I^2 , the "Zapfen-zähne" of the German authors.

If this anomaly was only met with a single time it might be attributed to accidental circumstances, as we so often see in nature, and especially with the teeth. But as the cases are, comparatively speaking, frequent (I have been able to collect six cases for the collection of the University Dental Institute at Utrecht), the case is quite different, and the question arises, how we have to explain the fact?

A satisfactory explanation can only be given, I think, by accepting the views of Professor Rosenberg, of Utrecht, who in the beginning of this year published his researches in the *Morphologisches Jahrbuch*, xxii. Bd., 3 Heft, under the title: "Ueber Umformungen an den Incisiven der Zweiten Zahn-generation des Menschen" (Leipzig, Wilhelm Engelmann).

Part of his work is devoted to the question if the typical, normal or general formula—

$$I \frac{3}{3} C \frac{1}{1} P \frac{4}{4} M \frac{3}{3}$$

for the mammalia, as accepted by many authors, is correct with regard to the incisors, to which he has limited his investigations.

One may differ in opinion about the value of the formula. It is certain, says Rosenberg, that the greater number of teeth of a special kind, which serve as comparison with a special row of teeth, must be accepted as the expression of a primitive state. The changes which the dental system of the various classes of the vertebrates have undergone, all show the very important part that is played by reduction,

although it is, of course, not the only modifying process. On the other hand, no observations in the phylogenetical development of any higher differentiated forms are available which, even in some measure, would justify us to accept the origination of new forms of teeth.

At first sight, the formula I^3 , as the primitive form for the genus "Man," seems acceptable. Many observations tend to corroborate this view. Rosenberg cites the cases of Von Metnitz in his Atlas (Heider and Wedl's, newly edited in 1893, Leipzig); of Albrecht, who observed two cases; of Turner, who mentions one; and of Busch, who saw two cases of three incisors (superior) at each side. Then cases in which three superior incisors existed, only unilateral: Busch met with this condition six times, Virchow twice.

Rosenberg agrees with all who consider these cases as atavistic. This is the only possible explanation, he thinks. But the claims of an explanation are not satisfied with this decision. It still has to be shown which of the three incisors has been reduced during the phylogenetical changes.

Upon this question, Rosenberg tells us that *three* views have been propounded:—

(1) By Hensel, who concluded that the most laterally situated incisor (I^3 had disappeared, he comparing the conditions with those of some mammalia.

(2) By Baume and H. H. Edwards, who are of opinion that the *central* incisors have disappeared, the two of which we are in possession being I^2 and I^3 .

(3) By Albrecht (in his work entitled "Sur les 4 os intermaxillaires, le bec-de-lièvre et la valeur morphologique des dents incisives supérieures de l'homme" Bruxelles, 1883, pages 18 and 19), Turner, and A. Wilson, who think that the I^2 has been reduced, and those left are I^1 and I^3 .

Professor Rosenberg remarks that all these authors advance evidence for their own opinion, but do not mention or insufficiently speak of, the other possibilities. It has now to be considered which of the opinions propounded is the most probable one, or if perhaps two or all three of the modes named above, have taken an active part in the reduction.

For simplicity's sake, Rosenberg uses the following terminology: He maintains the terms I^1 and I^2 for our two normal incisors. These, then, are homologous with the same organs which are also met with in cases of atavism. But those teeth, which in these cases have to be considered as the

atavistic teeth, and which generally are called supernumerary teeth, he designates by the names of I^a , if they are seen at the mesial side of I^1 ; I^b if present between I^1 and I^2 ; and I^c if between I^2 and C.

Now Rosenberg finds that we are obliged to admit of an I^a , I^b , and I^c having previously existed. We would be going too minutely into details to quote the arguments which he alleges to prove his opinion. Those interested in the question will prefer reading the original. It may suffice to state that Rosenberg has consulted vast collections of casts, skulls, and as much of literature on the subject as perhaps exists, and that he, contrary to the opinion of Virchow and Busch, considers every supernumerary tooth covered with enamel as an atavistic (*i.e.*, reduced) one.

So it appears that, in the formula, I^3 is not correct. Rosenberg does not set great value on a formula, but, if a formula must be, the 3 has to be changed into a 5. Of the five primitive incisors, then, the first, third, and fifth have disappeared, and the two incisors left are the *second* and *fourth*.

Now, if Rosenberg's deductions are correct—and I do not think they could be contradicted on any plausible grounds—the anomalous temporary incisors I have described have, I think, to be considered as I^a , I^1 , and I^b coalesced, or a coalescence of I^1 , I^b , and I^2 , or even of I^b , I^2 and I^c , as probably is the case in fig. 5—a new evidence of the accuracy of Rosenberg's hypothesis, that I^3 in the formula is a mistake.

It is rather astonishing that so little attention has been paid to the temporary dentition of "man" in questions like those now under consideration, although it cannot be denied that the chances of observation are somewhat restricted, these teeth being shed at such an early stage of life. It certainly cannot be because we have no right to attribute the same value to the temporary set, in the history of evolution, as to the permanent teeth. Rosenberg also states, in his paper, that with the mammalia the number of temporary and permanent incisors of the same form are generally similar.

The explanation I have here attempted to give is further corroborated by the fact that a coalescence of *three distinct* teeth, taking the place of a first temporary incisor, has several times come under observation.

It still remains to be explained how it is that the three teeth should coalesce. Anyhow, this fact will less surprise

anyone who has had any experience of dental phenomena with children, as double teeth—*i.e.*, two teeth coalesced—may be met with repeatedly. All such cases have to be explained as a coalescence of I^a with I^1 , or of I^1 with I^2 , or even of I^2 with I^3 (all deciduous); and it will be difficult, I think, to deny the plausibility of this suggestion. Now if two teeth can coalesce, the coalescence of three must equally be possible, and this especially as the coalescence is principally limited to the fangs of the tooth, admitting one single papilla, but still divided enamel organs.

Mr. J. F. COLYER said he had a patient in attendance, her case being interesting as an example of very rapid decay in a comparatively young child. She was about eight years old when she first came under his observation, and at that time the upper central incisors were very badly decayed, only about one-third of the crowns of the teeth remaining. The temporary and first permanent molars were also very carious, being practically level with the gum. The four lower incisors were carious at a place about half-way up. The decay was of a very soft character, and the teeth seemed somewhat hopeless to do anything with in the way of filling. He mentioned the case simply to state the method of treatment that was adopted, and which seemed to have been successful. Once a week for the first month the teeth were given a thoroughly good coating of nitrate of silver, whilst at the same time he suggested to the mother that twice a day the teeth should be dried, and then spirits of wine applied to the surface, keeping the mouth open for two or three minutes if possible, in order that the spirit might evaporate, and by that means harden the dentine. He saw the child once every two months, and applied a fresh coating of nitrate of silver. The result had been very satisfactory. The teeth under the nitrate of silver had certainly hardened up very much, and there was an arrest of the decay. The treatment seemed to have had this effect, that it had given the child something to get along with until the remaining permanent teeth erupted. He was quite aware that nitrate of silver made the teeth horribly black, but at the same time it was better to give a child some horribly black things to eat with than nothing at all.

Mr. VANDERPANT asked Mr. Colyer whether he could in any way account for the rapid caries. He had himself met with similar cases, and had found constitutional treatment beneficial.

Mr. BEADNELL GILL said Mr. Colyer had in this instance adopted treatment which he had used for twenty years, and which he believed was very generally resorted to. He doubted whether the use of spirits of wine was of any service as an additional application. Nitrate of silver, both in temporary and permanent teeth, when judiciously applied would no doubt, if persevered with, give very good results in cases where nothing else was of any avail. Of course he recognised the drawback of discolouration, but when they remembered that it was applicable specially to teeth which were habitually looked upon as hopeless with reference to any other form of treatment, he thought they might safely adopt a remedy, which, although it might discolour, saved their patients the annoyance of being without teeth. He would ask if Mr. Colyer had used it in permanent teeth to any extent, and over what period he had had the opportunity of applying it.

Mr. F. J. BENNETT suggested that as the child was young, and some of the teeth appeared to be temporary, when the teeth were shed Mr. Colyer should save them and make sections, because when nitrate of silver had been applied for a known period, and the previous condition of the teeth was also known, it would be very valuable to see the exact effect upon the dentine under such conditions. It was easy to talk after the event, but it would have been perhaps well to have withheld the nitrate of silver from one or two of the teeth as a sort of control experiment, to observe how far the teeth would have corrected themselves without that application : at any rate the nitrate of silver appeared to have been valuable in this case, and as Mr. Beadnell Gill had said, it was not really a new application. Nitrate of silver had been largely applied, and was mentioned in the early editions of *Tomes' Dental Surgery*. He had himself used it, when pivoting teeth, to coat the surface of the roots. The value of nitrate of silver was well known, but if Mr. Colyer would save some of the temporary teeth, and either make sections, or allow others to do so, he would be conferring a benefit upon their science.

Mr. J. F. COLYER said he had no wish to claim that the use of nitrate of silver was anything new, but he thought that every now and then even a well-worn topic bore reviving. He could not account for the extensive decay in the teeth of this patient beyond the fact that the first permanent molars and the upper incisors presented the well-known honeycomb condition, which naturally predisposed them to decay. In

addition, the child was of a distinctly strumous type. The way in which he applied nitrate of silver was that which he had learned as a student from Mr. Storer Bennett, by melting it on a piece of wire. That was certainly the best way, because it could be taken to any part that was desired, and there was no possibility of it slipping and passing down the throat. He could not altogether agree with Mr. Beadnell Gill that spirits of wine was not useful. He did not say it was very useful, but he thought there was a certain amount of utility in it, because in cases in which they had only used spirits of wine, or recommended patients to do so, they had decidedly seen a hardening of the teeth to result. Besides, he was rather inclined to advise patients to use spirits of wine, because to a certain extent it made them look after the teeth. He had constantly used nitrate of silver ever since he had been in practice, and always found the most satisfactory results. In erosion cavities, more especially in that extensive soft decay that was produced in teeth coming in contact with artificial plates, there was nothing like nitrate of silver. With regard to Mr. F. J. Bennett's request, he should be only too pleased to give him one or two of the teeth when they were extracted.

DISCUSSION.

Mr. STORER BENNET said Dr. Buxton's paper was full of suggestions in so many and such varied directions, he was sure he would not be misunderstood in alluding to only one or two of them; but in speaking on a paper such as this, one could only in a minute or two select one or two subjects. He wished to draw attention to two very interesting points brought out by Dr. Buxton. One was the solution of blood corpuscles that took place when chloroform had been administered, and the very happy explanation of those otherwise inexplicable deaths that occurred soon after the apparent recovery from the anæsthetic. It often seemed a mystery why a patient who had previously had an anæsthetic, apparently without any adverse results, and had recovered from its effects to a certain extent, died within a short time of regaining consciousness. They had hitherto no means of accounting for such unfortunate results, but the explanation given by Dr. Buxton of the solution of the blood corpuscles seemed a most happy one. The second point to which he wished to draw attention, was to the sort of fatty degeneration that took place when chloroform had been administered on

several occasions. This had a very practical bearing, for patients frequently stated that on more than one occasion chloroform had been administered to them, and urged this as a guarantee that it might be safely readministered for dental operations. They seemed to think that having had it once, or twice, or thrice, without any unfortunate circumstances arising, would justify its being administered indefinitely. If, however, it was borne in mind, as explained by Dr. Buxton, that there was a certain tendency to a process similar to fatty degeneration when chloroform had been administered, an additional reason would be forthcoming for declining to allow chloroform to be administered to their patients at all, and the fact of its previously having been successfully made use of would be no justification for administering it again. He heartily congratulated Dr. Buxton on his paper.

Dr. HEWITT said he had nothing to add except to say that he had listened with great interest and profit to the very brilliant *resume* of the whole subject of anæsthesia which had fallen from Dr. Buxton's lips. He most fully agreed with his remarks. It certainly should be their duty, whenever they possibly could, to administer anæsthetics in such a way as to interfere as little as possible with the processes of life, and that was the point which was so admirably brought out in Dr. Buxton's paper.

The PRESIDENT said it only remained for him to tender the very hearty thanks of the Society to Dr. Dudley Buxton for his paper, and also to thank those gentlemen who had brought forward shorter communications that evening.

Dental News.

DEATHS UNDER CHLOROFORM.

On the 4th inst. Dr. Walton held an inquest touching the death of Rose de la Mare (13), the eldest of two daughters of the Rev. S. T. de la Mare, superintendent minister of the Wesleyan Circuit, Northallerton. The circumstances are very sad, and the profoundest feeling of sympathy has been generally elicited on all parties concerned. As far as can be gathered from

the evidence, Dr. Tweedy had been attending deceased for the last six or seven weeks for a complication of diseases. She had been suffering excessively from neuralgia, which had greatly distracted her, and rendered her nights sleepless. One side of the mouth was all ulcerated with the bad teeth, and it was deemed necessary to extract a number of them to give the poor girl relief. Accordingly the doctor called in Mr. Sugden, dentist, on Wednesday afternoon, and, taking into consideration her condition, it was thought necessary that chloroform should be administered. Deceased was then cheerful, and her pulse was beating strongly, when one drachm of chloroform was given her. After one tooth had been extracted, deceased gave a little start and shout, indicating evidently that the chloroform had not taken sufficient effect. The dentist was then proceeding to extract the second tooth, when the doctor observed the patient to alter colour, and a deadly change came over her. The state of her pulse and heart gave at once cause for the gravest apprehension, and the doctor at once called in Dr. Walton, who applied the galvanic battery, and other means to induce artificial respiration, but they were of no avail, the patient expired.

Dr. Walton said he should not give evidence in his own court, but he could corroborate the evidence of Dr. Tweedy as to doing all they could to revive deceased.

In answer to Mr. W. Reed, a jurymen, Dr. Tweedy said that he did not consider in this case it would have been better to have administered ether, and he was of opinion that the deceased was more than equal to the small dose of chloroform.

The jury returned a verdict that deceased died owing to the failure of the heart's action under the administration of chloroform.

On February 21st, an inquest was held on Ernest Henry Tinsley (15), son of Mr. W. H. Tinsley, solicitor, Dudley, who died whilst under the influence of chloroform. The mother of deceased said that the lad desired to join the navy, in order to do which it was requisite that he should submit himself to dental treatment. She took him to see Mr. Morris, Castle-street, who advised him to have eleven teeth extracted.

Dr. Bellingham, who said he carefully examined deceased's heart and chest, came to the conclusion that he was justified in administering chloroform. Insensibility having been pro-

duced, one tooth was extracted, when deceased showed signs of recovery, and witness again administered the chloroform. When the operation was completed, Tinsley appeared to be in a condition usual with chloroform potients, but soon afterwards his pulse ceased, and he expired.

Dr. Messiter, who had made a post-mortem, said he should have been prepared if the case had been under his treatment to have administered chloroform. He considered that the anæsthetic was properly administered.

The jury, in returning a verdict of "Death from misadventure," expressed the opinion that no blame could be attached either to the doctor or the dentist.

APPOINTMENTS.

George Cunningham, M.A. (Cantab.) D.M.D. Harv. L.D.S. Eng., and W. H. Dolamore, L.R.C.P. Lond., M.R.C.S. and L.D.S. Eng., have been appointed Dental Surgeons at the London Hospital.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only, and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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TEETH AND THEIR RELATION TO SPEECH.*

By Mr. B. NORTH.

Among the functions of teeth that of their use in speech is by no means the least important to man, who is under the constant necessity of using these appendages as a means of intelligent communication with his fellows.

Whilst many have recourse to the dentist's art that their powers of mastication may be restored, or improved, and also, indirectly, their general health, I think more seek his help out of concern for their facial appearance, and some are certainly induced to become his patients in order to remedy imperfect speech. It is, therefore, by no means irrelevant that a dentist, and more especially a dental student, should become a student of language.

You may be inclined to ask what can be simpler than the alphabet. But when you come to consider that our alphabet differs from every other, that whilst we have only twenty consonants, some have thirty or seventy; that a great many have not many letters which we are inclined to deem indispensable, whilst possessing others of which we are wholly ignorant, you will more readily concede that few, if any of us, really know our A, B, C.

* Read before the Students' Society of the Victoria Dental Hospital, Manchester.

It is not my intention to speak of the immense improvement in speech which a dentist may accomplish by rectifying imperfections in other parts of the oral cavity, viz., the palate and lips.

The teeth have generally been considered of use only in the enunciation of certain consonants, and were supposed to bear no relation to the production of vowel sounds or voiced sounds ; but among writers on language there has been some contention about the definition of vowel and consonant, and their method of production. However, whilst it can be demonstrated that the teeth do assist in the formation of some vowel sounds, e.g., *e*, they undoubtedly are of much greater service in producing consonant sounds, for as Max Müller says, "All consonants are really checks, and their character consists in their producing for a time a complete cessation of audible breath or voice." The teeth really help in the production of articulate sounds in the following manner : they form an arch, or ridge, in the front of the oral cavity, against which the tongue pressing in various situations acts as a valve and by producing modified or complete closure gives rise to varying sounds or noises.

In a perfect denture it is the close propinquity of the tongue with the dental arch, and the readiness with which it can be made to leave or come in contact with any part that makes speech so easy ; and on the contrary, the presence of any serious dental irregularity makes it impossible to produce certain articulate sounds.

When at rest the tongue is in close coincidence with the dental arch of the lower jaw, but it is by pressing the edges of the tongue against the upper arch that the various dental consonants are articulated.

When the border of the tongue is closely applied to the teeth we have closure of the oral cavity, and air cannot pass through it, but when the border of the tongue is only par-

tially in contact with the dental arch we have imperfect closure, and air is able to pass and produce a sound according to the modification of the aperture. Thus it will be seen that the sound is produced not at the place of contact along the opening. Of course, if some teeth are missing against which it is necessary for the tongue to press, it is apparent that the required escape for the air cannot be produced, and we shall have the absence of the allied sound.

I wish now to analyse the letters in enunciating which the teeth are concerned, and in this I quote extensively from Salter and Max Müller.

In pronouncing *D*, the tip of the tongue is placed close behind and against the gum of the upper incisors, and its edges against the upper gum and teeth so as to close the mouth entirely, then the parts are suddenly opened. *T* is pronounced in exactly similar fashion, but with a more forcible expiration of breath. There is an identical closure in *N*, but there is a subsequent prolonged sound through the nose. Hence when the nose is obstructed during a cold it cannot be sounded, as "Dadkid" for "Nankin," and "Dodsedse" for "Nonsense." Vice versa in cases of cleft palate, we have for "a dark dusky dado," "a nark nusky nano."

In sounding *V* the upper incisors impinge on the lower lip simultaneously with a gentle expiration, and in *F* a more forcible breathing. *V* and *F* are called by Salter denti-labials, and he suggests that it may be because the negroes possess a thick prominent lip that they are unable to say these letters. Persons who lose the central incisors find themselves deficient in these parts of the alphabet. In pronouncing *TH* the tip of the tongue is placed against the upper front teeth, or between the upper and lower, and the air driven through the central aperture over it, the mouth remaining partially open. In *s* and *z* the tongue is moved a little further backwards against

the gum, and the air driven through a similar valve, *s* being more aspirated than *z*.

In sounding *R* the tip moves a little more upwards towards the palate and to roll the *r* the tip of the tongue moves from behind the lower incisors to the upper. In *L* the closure is the same as in *D*, but in the former there is an aperture on each side with central closure as in *D*. The similarity of the two can be appreciated in sounding "candle."

In the sibilant *sh*, one of the most purely dental sounds, air is simply forced between the closed, or almost closed, teeth. *J* is really a compound sound, made up of *D* and *J*, as you will perceive by slowly pronouncing the word "joint." *CH*, which needs a similar closure of the mouth, being really aspirated *J*, might be represented by *tsH*, *e.g.*, "church."

I have already pointed out that *e* is really a dental vowel, and Salter demonstrates that *a*, *i*, and *u* by incorporating a partial *e* sound are half dentals. *A* and *I* are terminally dental, whilst *U* is partially so. Very frequently also in *Y* there is an introductory *e* sound, *e.g.*, in "yes" and "yard."

It is quite evident that in cases of injury to, or loss of, any of the parts that help to make a particular form of the oral cavity, the speech will be correspondingly deficient. Thanks, however, to the great flexibility and adaptability of the remaining parts, practice and usage enable the impoverished individual to almost entirely remedy the defects. So where the upper incisors are gone, the gum is made to serve fairly well; and where the molars and bicusps are wanting the cheek by lateral depression very greatly compensates.

When artificial teeth are inserted in such mouths, they are for a time an impediment rather than a help, although eventually, speech in such persons is made much more perfect.

It is interesting to notice the omission, or mal-pronunciation of certain letters in individuals and races. Thus Max Müller points out that the Mohawks and Senecas keep their

mouths open during speech constantly, and therefore have no *p*, *b*, *m*, *f*, *v*, or *w*, which all require closure.

D is never used in Chinese, Mexican or Peruvian.

N is absent in the language of the Hurons.

The Aborigines of Australia and New Zealand have no *s*, but substitute *h*,

Sanskrit, which is said to be the most perfect of all languages has no *f* or sibilants.

We know that English is deficient in guttural breathings, similar to the German *ach* and *ich*.

Arabic has no *p*.

The Chinese never pronounce *r*, but for "America" say "Ya-mel-lika."

Some races seem unable to distinguish by speech, or hearing, between certain sounds, just as some persons are unable to distinguish certain colours; thus it is only after infinite pains that a Hawaiian can be made to discern the difference between *c* and *t* or *k* and *t*. To them, therefore, there would be no difference between carry and tarry, car and tar, key and tea, neck and net.

Letters with somewhat similar closure are frequently confused, as *l* and *d*, "dong" for "long."

Many persons seem unable to pronounce certain letters, *e.g.* they say "grass" for "glass," "crowds" for "clouds," "ritten" for "little." In early life these can, as a rule, be readily remedied by a person who analyses the difference in the pronunciation of the substituted letter and the true one, and trains the defaulter to notice the dissimilarity. Webster in the introduction to his dictionary points out that among many English people *cl* is pronounced like *tl*, as "tlear" for "clear," "tlean" for "clean," and *gl* is sounded like *dl*, as "dlory" for "glory."

Amid all the omissions and substitutions we ought perhaps to have a feeling of complacent satisfaction that on the testimony of such an authority as Müller the *dental* consonants are most tenaciously clung to, for he says these exist in all languages.

ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 265.)

DISEASES OF THE TEMPORO-MAXILLARY JOINT.

The temporo-maxillary articulation is liable to the same diseases that affect other joints, although not with the same absolute or relative frequency. The following are the most important affections.

ACUTE NON-SUPPURATIVE ARTHRITIS.

This may result from injury, gonorrhœa, rheumatism, or syphilis. The synovial membrane is the structure most affected, the condition resembling synovitis of other joints. The chief symptoms are pain and swelling in the region of the joint and inability to open the mouth. The pain may radiate to the ear or temporal region. The masseters and temporal muscles are contracted and hard. After two or three weeks the acute symptoms subside and the joint may return to its normal condition, or may remain more or less stiff from the formation of adhesions inside or outside the synovial cavity.

Treatment.—The cause of the joint disease must be treated with suitable remedies, and the joint must be kept at rest by the application of an elastic bandage. The food should be entirely fluid, so that mastication may be suspended. After the acute symptoms have subsided an effort should be made to prevent the adhesion by the use of counter-irritation over the joint, by passive movement of the jaw and massage.

ACUTE SUPPURATIVE ARTHRITIS.

This condition may be due to a wound of the joint, or it may occur in the course of pyæmia, scarlet fever or measles; in these cases the trouble starts in the joint itself. In other cases suppuration may extend to the joint from neighbouring parts, such as the ramus of the jaw or the middle ear; in the latter case the pus finds its way into the joint through the Glaserian fissure.

The symptoms are in the first instance the same as those of non-suppurative arthritis, but on the advent of suppuration the local symptoms become greatly intensified, and are attended by febrile disturbance. The pus has but little tendency to reach the surface, being bound down by firm fibrous structures; it is prone to burrow deeply and may find its way into the ear through the Glaserian fissure, into the skull through the floor of the glenoid cavity, or amongst the tissues of the neck causing in some cases thrombosis of the internal jugular vein. The most important point in the *treatment* is to evacuate the pus as soon as possible by the use of the knife.

RHEUMATOID ARTHRITIS.

Rheumatoid arthritis of the temporo-maxillary joint presents very similiar features to those observed in other joints. It may attack young subjects, especially delicate females, or persons over fifty who are already suffering from the disease in other parts. It may affect one or both sides.

The structures composing the joint are greatly changed. The cartilages become worn away, leaving the articular surfaces of the bone uncovered. The inter-articular fibro-cartilage often disappears entirely quite early in the course of the disease. The articular surface of the condyle becomes flattened and worn away, and is usually roughened ; it is only rarely that it displays the eburnated or porcellaneous appearance so often seen in other joints. The neck of the condyle becomes absorbed, so that in some cases the mandible may look almost as if its condyle had been taken off with a saw. In some cases the condyle becomes greatly hypertrophied causing the symphysis to deviate towards the opposite side of the face ; it is thought by some that this condition although usually the result of rheumatoid arthritis may sometimes occur in persons who are otherwise healthy. The glenoid cavity is often enlarged, encroaching upon the eminentia articularis ; its depth is usually diminished by an irregular deposit of bone, and its surface is denuded of cartilaginous covering. No marked changes in the synovial membrane or ligaments have been observed or recorded.

The symptoms are pain and creaking on movement, stiffness of the joint, some general fulness, and in rare cases, when the condyle is enlarged, marked deformity. In the later stages of the disease, movement of the joint may be so restricted that the patient can only open the mouth to a very limited extent, and is quite unable to masticate food. *Treatment* is very unsatisfactory, the disease being in most cases incurable. Relief may sometimes be obtained by the use of small repeated blisters, hot sponging, keeping the joint covered so as to protect it from cold, and the frequent use of passive movements by means of a screw gag ; very little force must be used, or more harm than good will be done. When movement is greatly restricted the condyle may be excised (see Fixity from Ankylosis).

TUBERCULAR ARTHRITIS.

Tubercular disease of the temporo-maxillary joint is a very rare affection. It resembles tubercular disease of other joints. The synovial membrane becomes thickened and succulent, the cartilages eroded, and the articular surfaces carious or necrosed. Complete bony ankylosis may ensue.

The treatment consists in the prolonged use of rest and constitutional remedies. Should these means fail, the diseased structures must be thoroughly removed by operation.

FIXITY OF THE MANDIBLE.

Inability to open the mouth may be due to three conditions, viz., spasm of the muscles of mastication, ankylosis of the temporo-maxillary articulation, and cicatrices between the two jaws.

FIXITY FROM SPASM.

Spasm of the muscles of mastication may be due to some affection of the central nervous system, such as tetanus; in such cases the closure of the mouth is of no importance as compared with the disease of which it is a symptom. In women it may be due to hysteria.

The most frequent cause is some inflammatory trouble in the neighbourhood of the mandible or temporo-maxillary joint, such as mumps, inflammation of the lymphatic glands or impaction of a lower wisdom tooth. It not unfrequently happens that owing to want of room between the ramus of the jaw and the second molar tooth, or the malposition of the wisdom tooth, the latter is unable to erupt; the pressure which it exerts upon neighbouring parts produces a reflex tonic spasm of the masseter and internal pterygoid muscles. As a rule the spasm subsides as soon as the source of irritation is removed, but in some cases the inflammatory condition arising around the tooth spreads to the adjacent muscles,

setting up a myositis which may result in permanent contraction.

Spasmodic closure due to an impacted wisdom tooth is most common about the age of twenty, but may occur in much older persons, in whom eruption of this tooth has been delayed. Spasmodic closure may last a long time (in one recorded case as long as two years) and may be immediately relieved by removing the cause of irritation.

Treatment.—The mouth must be opened by means of a screw gag, whilst the patient is under the influence of chloroform. The wisdom tooth should then be extracted, or the second molar should be removed so as to allow room for it to erupt.

FIXITY FROM ANKYLOSIS.

Inflammatory affections of the temporo-maxillary joint may lead to a varying degree of stiffness, or impaired movement. The stiffness may depend upon adhesions outside the joint, fibrous ankylosis of the articular surfaces, or in more severe cases (especially those following upon suppurative arthritis) actual bony ankylosis. If the stiffness is dependent upon fibrous adhesions a certain amount of movement is obtainable either by the voluntary effort of the patient or by the use of the screw gag when the patient is under the influence of chloroform. In cases of osseous ankylosis the jaw is absolutely fixed.

Treatment.—In recent cases of stiffness from external adhesions or from fibrous ankylosis, an attempt may be made to restore movement by the forcible use of the screw gag. It is, however, but seldom that any permanent benefit results. Should this method of treatment fail, two other courses are open to the surgeon, viz., subcutaneous division of the adhesions and excision of the condyle.

The division of adhesions is performed by passing a very

narrow tenotomy knife into the joint immediately in front of of the temporal artery and carrying it freely round the condyle completely dividing the external lateral ligament, and partially the insertion of the external pterygoid muscle. The depth of the incision must be carefully measured to avoid wounding the middle meningeal artery. The immediate result of the operation is very good, but relapse is very likely to ensue.

The most satisfactory treatment is excision of the condyle. This may be effected through the mouth as practised by Dr. Meads, but it is best done from without by the following method. An incision $1\frac{1}{2}$ inches long is made along the lower border of the zygoma. The parotid gland and branches of the facial nerve being drawn down, the masseter fibres are cleared away from their insertion, and the joint exposed. The neck of the condyle is then divided with a saw, trephine or chisel, the condyle turned out with an elevator, and the attachment of the external pterygoid muscle severed. The fibro-cartilage is left behind. After the operation the mouth should be opened at least an inch, and this proceeding must be repeated at frequent intervals so as to prevent the tendency to relapse.

FIXITY FROM CICATRICES.

Cicatrices binding the two jaws together may result from ulcerative or gangrenous stomatitis, mercurialism, necrosis, alveolar abscess, compound fractures, lacerated wounds, and surgical operations upon the face or jaws.

The constricting bands may be limited to the mucous membrane, or may involve the tissues of the cheek being attached to the bone, and forming a firm bond of union between the two jaws. In a few cases the two jaws have been united by a buttress of bone, or the coronoid process has been found glued to the inside of the zygoma as the result of osteoplastic periostitis.

Treatment. Attempts to stretch the cicatrices by mechanical means are not often successful, and the division of bands inside the mouth are usually futile. Attempts to cover the wounds, made by excision of scars, with flaps of mucous membrane or skin are "difficult, bloody, and disappointing." The best result is obtained by performing Esmarch's operation. This consists in removing a wedge-shaped piece of the jaw, so as to form a false joint in front of the cicatrix. An incision two inches long is made along the lower border of the jaw in front of the masseter and cicatrices. A triangular wedge of bone is then removed with a narrow bladed saw or bone forceps. The wedge should measure $1\frac{1}{4}$ inch below and $\frac{3}{4}$ inch above, its apex corresponding to an edentulous gap in the alveolar border if possible. Passive movements should be employed early and persisted in until there is no tendency to relapse,

When only one side of the mouth is affected this operation restores the power of mastication as well as of opening the mouth; when it is necessary to operate on both sides, the function of mastication is necessarily lost, although in this respect the patient is no worse off than before the operation.

(*To be continued.*)

THE latest Hygienic Novelty in Paris is the use of porous glass for windows. This is declared to possess all the advantages of the ordinary window framing, and, while light is as freely admitted as through the medium of common glass, the "porous" glass also admits air, the minute holes with which this is intersected being too fine to permit of any draught, while they provide a healthy, continuous ventilation through the apartment.—*Popular Sc. News*, 1895, xxix. 114.

THE TREATMENT OF PULPLESS TEETH.*

By Mr. STOREY.

Mr. President and Gentlemen :—When treating teeth the pulps of which have lost their vitality, we have to consider not only their actual condition, but also the state of health and constitution of the patient, for it is evident that the peridental membrane of a healthy person will have a greater amount of vital resistance to the various altered conditions to which it may be subjected, than that of a person of an anæmic or weak constitution. It is often noticed that whilst the tooth of one patient treated under the most unfavourable conditions may prove of great use to its possessor for many years, that of another patient treated in precisely the same way, and under even more favourable conditions, may become such a source of suffering as to necessitate its extraction.

The same principles of treatment should be applied to a tooth with a gangrenous pulp as a Surgeon would apply to a similar condition in any other part of the body : removing all the putrescent matter, and sterilizing with some germicide. Thorough aseptic methods of treatment should be adopted, for it is absolutely necessary to prevent the introduction of septic matter into the canals, sinuses, and abscess sacs, by the use of perfectly sterilized instruments, and every other aseptic precaution. Barbs and nerve extractors should be kept perfectly aseptic by dipping in some germicide, as bichloride of mercury, and a new bur should always be used when making a fistulous opening through the alveolus. Many abscesses have resisted treatment because proper aseptic precautions had not been taken when treating them.

Pulpless Teeth may be divided into two classes—

* Read before the National Dental Hospital Students' Society

I.—Those in which the pulps have been removed by devitalization or extirpation.

II.—Those in which the pulps are already dead.

The treatment of teeth of the first class is usually fairly easy, there being no serious subsequent inflammation, provided proper aseptic precautions have been taken. The rubber-dam should always be adjusted, and the cavity in the tooth enlarged until the pulp cavity is easy of access. The pulp chamber should then be opened up freely with a rose-bur, so that there are no overhanging edges left. If the canal be then syringed out with cold water, it will be found that by passing a Donaldson's bristle, or a nerve extractor, to the apex of the canal, and then twisting it, the pulp can nearly always be removed whole. It is not necessary to ream out the canals, because wherever you can pass a Donaldson it is possible to introduce your filling material; the canal should then be thoroughly cleansed out with chloroform, thoroughly dried and filled. No germicide is needed, provided that all the instruments used were in an aseptic condition, since arsenic, one of the most powerful of antiseptics, being used to devitalize the pulp, the tooth is in the most aseptic condition possible. Oxychloride of Zinc is perhaps the best filling material for these teeth, especially if the tooth be in front of the mouth, on account of the facility of reaching the canals, because there is very rarely any subsequent trouble from these teeth.

Class II., viz., Those in which the pulps are already dead are most difficult to treat, and more uncertain when treated, than when the pulp has been devitalized. As a rule the root canals will be found filled with septic matter, which may, or may not, have made its way through the apical foramen, causing inflammation and an alveolar abscess. The rubber dam having been adjusted, and the decomposed pulp removed, by a Donaldson's bristle, or nerve barbs, the canal should be

syringed out with a very strong solution of Caustic Potash or a solution of Permanganate of Potash, and then be reamed out as much as possible, to remove the layer of putrefying dentine. Great care should be taken during this operation not to force any septic matter through the apical foramen. The canal must be thoroughly sterilized with bi-chloride of mercury, 1-500 solution, or Peroxide of Hydrogen, or a 1 per cent. solution of Arsenious Acid in Glycerine. This should be allowed to stay in the canal, renewing at intervals until the cotton, on being removed, has no smell of putrefaction. The canal must then be thoroughly dried, first by passing cotton soaked in alcohol into it, and then by means of a hot air syringe. Too great stress cannot be laid on the fact that the canal should be thoroughly dried, for it is well known that no micro-organisms can exist without moisture. It should then be filled, and preferably with Gutta-Percha as it can at any time be removed, if necessary, by the use of a hot instrument.

There are some dead teeth in which the pulp is shrivelled and free from the results of decomposition. They require no more attention than the removal of the contents of the canals and filling, taking care that no moisture enters the canal.

The following are some of the drugs used in the treatment of pulpless teeth :—

Bichloride of Mercury is one of the strongest germicides known, and on account of its rapid, certain, and preservative action, it is indicated when immediate root-filling is practised. In teeth where the dental foramen is large the 1 in 500 solution should be used cautiously, and the 1 in 200 solution should only be used in root canals, whose foramina are small, as it contains the minimum dose of the salt in 10 drops.

Arsenious Acid is another most powerful antiseptic. Teeth whose pulps are in a putrefying condition may be treated, without removing the putrescent matter in the canals. The

pulp cavity is cleaned out, but not the roots, and dressing of carbolic acid is then put in the roots for a few minutes. A piece of card, dipped in oil of cloves, is then taken, and $\frac{1}{20}$ of a grain of arsenic is put on, and placed face down over the root canal. A metal cap is put on this and the tooth filled permanently. I think this was the first step towards the immediate method.

Carbolic Acid is a very powerful antiseptic, but whilst it subdues offensive odour, it does not completely arrest the activity of free bacteria. It coagulates albumen. It is useful in the treatment of alveolar abscess.

Creosote is not a germicide or disinfectant at all, and therefore it cannot be used instead of carbolic acid or vice versa. It does not coagulate albumen. It forms a stimulating application to suppurating surfaces.

Iodoform as an antiseptic possesses many good qualities, but as a dressing its powerful odour is rather a disadvantage, the odour of the septic gas being covered. It may be dissolved in any of the essential oils, preferably eucalyptus. These together form antiseptics of a powerful and permanent kind, and cause no irritation. Iodoform combined with wax is also used as a permanent filling material, but if once the canal is made thoroughly aseptic no further antiseptics are needed.

Peroxide of Hydrogen is a very useful germicide, especially for front teeth, as, it being a powerful and oxidizing agent, it does not discolour them. The presence of pus can be determined by the energetic bubbling which occurs when it is used. An ethereal solution of peroxide of hydrogen 30 vol. strength (with a little alcohol) is very useful, as it does not readily decompose.

ROOT FILLINGS.

In the choice of a filling material it is essential to consider the condition of the tooth, and the access to, and size of the

root. A perfect material should be non-irritating, antiseptic, easy of insertion, perfectly adaptable to the walls of the canal and also easy of removal. Nearly all the ordinary filling materials are used, according to the choice of the operator so I will mention the advantages and disadvantages of the most prominent.

Gold.—Nearly all root canals were once filled with gold, but the many abscessed ones that were removed and found with gold projecting through their apices, led to its nearly complete abandonment.

Cotton.—Cotton soaked in some antiseptic is placed in the canal, the antiseptic being supposed to keep the canal aseptic for ever. But moisture is able to get into the canal, and the antiseptic, if there was any left, will have no effect on the putrefaction that would thereby be produced.

Wood.—A piece of orange wood tapered to fit the canal, and dipped in some antiseptic is used by some. In driving it up the canal, it is very liable to be forced through the dental foramen, and cause pericementitis. It is also very difficult to remove, as it splinters so that it cannot be removed with the pliers, and a drill only tears it to shreds.

Lead.—A piece of lead tapered to fit, and forced up the canal has been used on account of its supposed therapeutic effect. It is also liable to be driven through the dental foramen, and is also difficult to remove.

Oxychloride.—Oxychloride of Zinc is one of the best root fillings on account of its antiseptic and anti-ferment properties. Given free access to canals it cannot be beaten, but it is difficult to remove.

Gutta Percha.—The most widely used material at the present day is Gutta-Percha, on account of the facility with which it can be inserted or removed. It does not cause irritation, and thus very seldom causes inflammation if pushed through the dental foramen.

Shellac.—For filling very fine canals, up which it is not possible to introduce Gutta-Percha, Shellac is very useful. When drawn into fine threads, it is very flexible and elastic, and will pass up the finest canal, a drop of spirit running up by capillary attraction fixes it in its place.

DENTAL MECHANICS.

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PLATE WORK.

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(Continued from page 159.)

EFFECT OF CLASPS ON THE TEETH.

There is not the slightest doubt but that clasps are destructive to the teeth they encircle, although it is a question whether that destructive influence could not be reduced very considerably, if not altogether avoided, were the patient to exercise a greater amount of care, in scrupulously cleaning the inside of the clasps.

To do this effectually the clasps should in the first place, be highly polished on their inner surface, and when the case is removed at night, as it always should be, if placed in a tumbler of water, along with a small piece of ordinary common washing soda, the tenacious deposit usually adherent to them is dissolved and it can then be readily removed and the case rendered perfectly clean by a liberal use of soap on the tooth brush in the morning.

It is the keeping of fermented portions of food etc., mixed

with the oral secretions, in absolute contact with the teeth for any length of time, that acts so disastrously to them.

The bicuspid teeth, more especially in the lower, are very prone to be affected, and it becomes a serious question as to whether we should not adopt the excellent suggestion of Mr. John A. Biggs of Glasgow, and make a jacket or crown for these teeth at the same time as we are making the case in order to save them from this serious liability.

His usual method is to reduce the tooth to be clasped, to a cylindrical shape, and with a copper tape find its dimensions. 22 carat gold is then cut to the pattern thus procured, which is bent, fitted and fastened with Dirigo Cement. He has many of them in use and says that they answer the purpose admirably.

After setting up the models to the bite by means of one form or other of the articulators alluded to on pages 77 to 84 of the "Dental Laboratory," we are enabled to see the amount of space that has to be fitted with teeth.

These spaces may be of three kinds, the first, deep enough for tube teeth, that is to say where they can be left sufficiently long to be strong, the second, necessitating flat teeth; in this case the opposing teeth bite nearly, or quite on to the gum or plate. The third variety of space may be called intermediate, that is not deep enough for a tube tooth, but still deep enough for a masticating surface of metal or vulcanite, attached to a flat tooth.

When a patient puts himself under our care, in order to obtain a suitable masticating apparatus, we should endeavour to fulfil our obligation to the best of our ability, for it is of primary consideration for the patient's health that he should be able to thoroughly masticate his food.

By a reference to the teeth in a normal jaw, we find that each individual tooth comes into intimate contact with its fellow, and we should make our artificial teeth to conform to

the natural as near as possible in this respect. One cannot have a better biting surface than that produced by the use of tube teeth, and one cannot imagine a purer, more workman-like, and artistic denture, than a well made gold plate mounted with a set of Ash's tube teeth. There is something about it that speaks for itself, and it will still retain after long years of use, the evidence of the good work put into it.

Appliances for fitting tube teeth.

The Lathe (Fig. 16). The great essential for this, is that

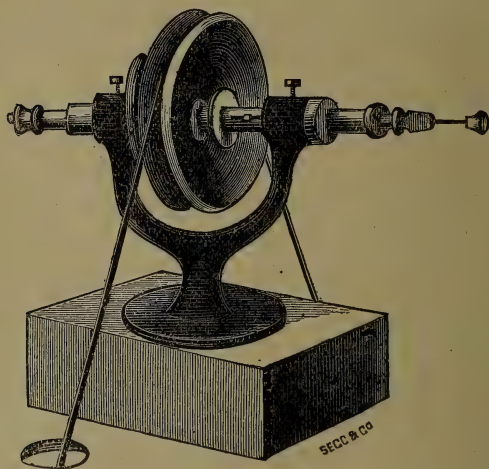


Fig. 16.

it shall run perfectly true, and be fitted with chucks that will carry the largest, as well as the smallest wheels and cones.

Corundum Wheels range in size from three inches to a quarter of an inch, and also vary both in thickness and in grit. The largest and coarsest are used for roughing down a tooth and the finer and smaller, for fine fitting.

The Chipper. This is for reducing the length of a tooth before proceeding to rough-fit it at the lathe. It is safest to run a groove corresponding to the amount to be cut off, in

the base of the tooth with a thin corundum wheel ; this prevents any chance of cracking the tooth.

Carborundum Wheels. These have the advantage over corundum wheels, that they do not wear away so fast, and that they cut more rapidly. They can be fastened on to a chuck with shellac by first melting it on to the wheel, which should be made hot, and then heating the chuck and pressing it into the hole in the wheel.

The Chamfering tool. (Fig.17). This hard steel instrument



Fig. 17.



Fig. 22.



Fig. 23.

is to hollow out the base of a tooth to accommodate an eminence on the plates, or on the solder at the base of a pin. The point of this tool should not be made of too long a bevel, or else it would go too far into the tube, and perhaps burst it when the force was applied. Other requirements for this work are,

some paint, made either of carmine, or vermillion and oil, a tube file, a broach, and a clean linen rag.

All these things should be kept on the lathe bench ready for use.

For marking the position of the hole in the plate one requires a piece of steel wire that will pass down the tube of the tooth, as a marker; an old broach makes a very good one.

A stronger pointed instrument to deepen and confirm the hole made by the marker. (Fig. 18). Drill stocks and drill (see Figs. 19, 20, 21). This latter is drawn large in order to



Fig. 19.



Fig. 20.



Fig. 21.

illustrate how it is made. Fig. 19 is a universal stock that will accommodate a drill made from a broach, etc. The drill bow for use with the drill stock ends the list of tools for this work.

FITTING TUBE TEETH.

After reducing the tooth somewhat with the Chipper, we next proceed to roughly fit it to the plate by means of a large corundum or carborundum wheel, so that it rests fairly steady in its place. We will imagine that the case is an edentulous one. Having passed a broach or tube file through the tube

in the tooth to clear it out, a little hard wax is next melted on to the back of the tooth. A film of hard wax is also melted around the ridge on the plate.

The tooth is now warmed over a Bunsen or spirit lamp and adjusted to the plate, and then firmly fixed by adding more hard wax on to its back.

We proceed now to fit the next tooth, and having fixed that on in the same manner as the first one, the whole of the teeth may then be fitted and fixed to the plate. They should be kept sufficiently long to allow for fine fitting and adjustment to the bite.

The next operation is to mark the holes in the plate ; to do this we must take an old broach that will pass readily into the tube, and sharpen the end, by making three little facets on it until it is reduced to a point, the same as the chamfering tool previously described. This is passed down the tube and rotated using a little pressure. It will make a mark on the plate, provided the tube is free from wax ; should any have entered the tube, the broach must be slightly warmed and then pressed well home.

Another method of marking is to file an ordinary match quite round, until it will pass down the tube, this is touched at the end with red paint. This latter, however, is apt to get obliterated when removing the teeth.

Having marked the holes as first described, and seen that the teeth are not disarranged, the next thing is to warm the plate slightly, and remove the teeth ; the plate can now be warmed, and the wax cleaned off, when on examining the plate we shall see the marks made by the broach.

We now take a stronger instrument called a marker, (Fig. 18), and with it confirm and deepen the marks previously made, and the plate is then ready to have the holes drilled (not punched) in it. When drilling holes for the pins, we must take care to make them slant in the right direction.

It is much easier to bend a pin outwards than inwards, therefore as a rule the pin should have a bias in the latter direction. The hole should be drilled slightly smaller than is required, and the proper direction should be given it still more by means of a broach ; this should be marked so that it does not go too far through the plate, and make too large a hole. The bur caused by the drill and broach is now removed either by a file or sculptor.



Fig. 18.

We next take a piece of gold wire that fits the tubes in the teeth, and having passed it through to the point of the tooth, it is cut off with a pair of nippers to the right length. We now take a pair of roughening pliers, and grasping the wire about two-thirds of its length, we proceed to file the end of the wire five-sided ; this is not to taper it, or to reduce its thickness. We now examine the under surface of the plate, and according to the slant of the same, so do we file the end of the wire, that when it is pressed into the hole it will not cause any projection on the under surface. By filing the wire five-sided it holds firmly in its place and enables one to solder it without other support. The author has seen pins held in position with binding wire in order to solder them, but if the operation just described has been done neatly there is no occasion for any such aid, and the whole of the fourteen pins may be stuck in and soldered at once.

Before the pins are fixed in, the plate should be "pickled," then, after the pins are in position a little borax should be painted around each, both on the upper and under surfaces, and a small pallion of solder should be used. The plate

should now be placed so that it will rest steady on the soldering block and it should be heated up gradually, so as not to displace the pieces of solder. Where possible it is safest to direct the flame under the plate, and not directly on to the pins; one runs much less risk of sweating (melting) them. I would here mention that a clean hard piece of ordinary coke makes a very good block to solder on.

After the pins are soldered, and the under surface of the same made flush with the plate, the teeth should be adjusted, and if found to be in the right position, the pins should be cut down to the bite. We may now proceed to fit the teeth.

First of all we must clean the teeth of any adherent wax, then having made a thick paint of vermillion and oil we paint around the base of the pin, corresponding to the circumference of the neck of the teeth.

Now if we place the tube tooth on the pin until it comes in contact with the plate we shall find on withdrawing it, that it has a spot of paint on it—this must be ground out with a suitable wheel, and then the tooth replaced on the pin and the operation repeated. Sometimes we find the tooth resting on the solder around the base of the pin, then we must use the chamfering tool to work a little away from around the base of the tube; at other times one has to fit the tooth over a small elevation, in such a case one must use a very small wheel, (Fig. 22), or a carborundum cone such as could be fitted into the small chuck (Fig. 23). When a tooth is considered as fitted, there should not be the slightest space between it and the plate, and one ought to be able to grasp the tooth, and when pressing it on the plate, not be able to give it any rotary motion.

Before quite fitting the tooth it is best to adjust it to the bite, grinding it if need be, to conform to the articulating surface of the opposing tooth, after which finish the fine fitting. If tube teeth are fitted properly, and they are

steady on the pin, the sulphur which is used as cement will hold them securely, but if they do not lie steady on the plate then the rotary movement of the jaw will cause them to become loose.

After the teeth are all fitted, the edges should be slightly bevelled inwards with a very fine wheel ; this takes away any roughness, and makes a neater finish with the plate. Then they should be washed with hot soap and water, and a piece of string or wool passed through the tube to clean them. The plate should also be washed perfectly clean, all red paint removed, and pickled. After drying the plate the pins should be roughened with a pair of roughing pliers ; this is done by grasping the pin, not too firmly, and rotating the pliers, or else the pins may be slightly nicked with a sculptor. The molar pins may also be rounded at the points.

The pins must not be made so rough that the teeth have to be forced on, as it would involve a risk of cracking the tooth.

Before placing the teeth on the pins it is as well to clean the ends of the tubes from any outlying edge of platinum.

The last operation is to cement the teeth on with sulphur. This is best done over a spirit lamp or the small flame of a Bunsen burner. We begin by placing small pieces of sulphur about double the size of a pin's head on the crowns of the molars and bicuspid's on one side, then heating the plate until the sulphur melts ; when the sulphur begins to run down the tubes, another series of pieces may be placed in position, and the operation repeated until the sulphur appears around the tooth at its junction with the plate.

We next cement the opposite molars and bicuspid's, and lastly the front teeth. They do not require so much heat as the larger side teeth, and we thus run less risk of melting the cement out of the others during the process of heating up.

After cementing on the teeth, the finishing touch may be given by grinding the pins of the front teeth and bicuspid's flush with the tooth, and then rubbing them with water of Ayr stone.

(To be continued.)

CONGENITAL SYPHILIS.

The manifestations of congenital syphilis have for fundamental character : 1st, the infection is not the result of penetration through the lymphatic system ; 2nd, there are no primary sores ; 3rd, it affects the whole organism, externally and internally.

The influence of the father on the syphilis of the child has been notably exaggerated, but it is nevertheless certain. The influence of the mother is absolutely certain, independently of all paternal disease ; and the influence of the fœtus on the mother has been proved beyond doubt by the works of Diday and Fournier.

The manifestations of infantile syphilis consist in lesions of the skin—pemphigus, roseola and vesico-pustules,—lesions of the mucous membrane—mucous patches and coryza,—visceral lesions—usually of the lungs, the liver and the testicle,—and osseous lesions—principally of the cranium and more especially of the parietal bone.

Pediatrics.

CLAIM AGAINST A DENTIST.—At the Blackburn County Court on the 23rd. ult. Margaret Ann Bradley, the wife of a spinner, sued Anthony Hodgkinson, dentist, of Higher Eanam, for £5 the value of a set of teeth. Plaintiff said she had tried for twelve months to wear them. The case was adjourned in order that the opinion of experts could be ascertained.

British Journal of Dental Science.

LONDON, APRIL 1, 1896.

TUBERCULOSIS.

The dentist, like other surgeons, has to run a certain amount of risk of infection in relation with his patients, especially in Hospital work. And, like his medical brother, he should keep himself acquainted with the most recent work in the investigation of Disease. Apart from possible syphilitic inoculation from a patient's mouth, of which too many instances are known, the attitude at the chairside during long operations upon a phthisical patient suggests another possible danger. But on the present occasion we propose to direct our readers' attention to a broader question which is of the utmost importance, not to dentists in particular, but to the Public generally, of which they are a component part. There is another than the respiratory road by which the disease may enter, and the alimentary canal is now regarded as an important channel of infection. Although as early as 1843 it had been shown that tubercular material injected into rabbits produced tuberculosis, it was only when in 1883, Koch and his school showed the disease was due to a specific organism that the need for taking certain precautions became of scientific importance. It is, we think, one of the strongest arguments of the vegetarian that, under existing conditions, the flesh eater may get dosed with the tubercle bacillus.

A Report has recently been issued by a Royal Commission appointed in 1889, to inquire as to the effect of food derived from tuberculous animals upon human health, and one of the most important subjects dealt with is that of our milk supply. This, of course, largely affects the question of tuberculosis in children, and as Dr. SIMS WOODHEAD points out in his work on "Bacteria," whilst the child is suckled

by its mother there is little tubercle, but after the first year there is a very rapid rise in the mortality from this disease. Bolitz states that the *post mortem* examination of 2,576 children at Kiel during the years 1873—1889 showed that in over 16 per cent., there was tuberculosis. Of these deaths 18 per cent. occurred in children between six and twelve months of age. Those between one and two years rose to 26 per cent., and the ratio increased to 33 per cent. at three years. Dr. SIDNEY MARTIN experimented by feeding non-tuberculous animals with natural milk containing the bacillus, and found that it produced consumption; thus the question of sterilising all milk before use becomes of much importance. The temperature at which the bacillus develops best is exactly that of the human body, but raising milk for even a moment to boiling point renders the organism harmless. Dr. WOODHEAD says that a water-bath may be used until the temperature has risen from 176 to 198 degrees Fahr. This means that in most cases each quart of milk will be in the bath for half an hour.

In regard to meat, we have as yet no means for proving in England what proportion of the animals are diseased. In Copenhagen, however, where there is an excellent system of inspection at the slaughter-houses, the statistics for four years showed that 17 per cent. of oxen and cows and 15 per cent. of swine showed signs of tuberculosis; the calves and sheep were practically free. Now the important question arises as to whether the flesh of infected animals can convey the disease to man. Butchers and meat salesmen have contended that if the tuberculosis is localised the meat might be taken with immunity and they would seem to have Dr. Woodhead on their side. In the book already mentioned, that observer states there is little doubt that where the disease is limited to any one of the viscera at the time of death there is little danger to be anticipated from eating the well-cooked flesh from other parts of the animal. He was, however, able to produce tuberculosis in two rabbits by injecting into the peritoneal cavity the raw juice from intercostal muscles of a tuberculous cow, after all the diseased pleura had been

carefully stripped off ; juice from the muscle of the thigh injected into two other rabbits was innocuous. The same observer has found that roasting, boiling, or stewing would not make the deeper parts of an infected piece of meat wholesome, but the surface is sterilised. Dr. MARTIN, who has produced tuberculosis in animals by feeding them with raw and imperfectly cooked meat, points out that in slaughtering an animal with localised tuberculosis, the butchers' hands and knives may convey the infectious matter to other parts. The whole question is one of the utmost importance and we hope the time will soon arrive when some analogous system of inspection to that carried out with "Kosher" meat, may be provided for the benefit of the Gentiles.

MENTAL FATIGUE AND RECOVERY.—At the Cambridge meeting of the Medico-Physiological Association, Dr. Rivers described a method invented by Professor Kraepelin to ascertain the duration and period of rest necessary to recover from mental fatigue. The test individual is required to add up rows of figures, composed of units, as quickly as possible one after the other, for half an hour. The number of additions is then marked off, and compared with what can be done after a rest. A period of rest equal to the period of work, that is half an hour, is found to be quite insufficient to eliminate the effect of the previous half hour's fatigue, and even an hour's rest (double the time of work) does not altogether get rid of the effect.

PENTAL.—At the Society of Anæsthetists, Dr. Stallard related a fatality which had occurred under penthal in his practice, the case being his 148th administration. A woman age 23, attended to have several stumps removed. She was well developed and somewhat fat ; heart sounds were quick, but no *bruit* present, and no adventitious sounds in the chest. She took the anæsthetic well, but being very nervous commenced to breathe very quickly, but upon being

told to breathe more quietly she did so, and became unconscious in 44 seconds. Four stumps were extracted, when the face became pale and respiration ceased, and the pulse which could be felt was very feeble. The patient was placed on the floor, and Sylvester's method of artificial respiration performed, but there was no attempt at voluntary respiration. The feet and legs were elevated and rubbed by the students present, an enema of brandy was injected slowly *per rectum*, but none of it was retained. Warm cloths were applied to the præcordium, traction was rhythmically made on the tongue, ether mix was injected hypodermically over the præcordium. Pupils five minutes after removal from the chair were moderately dilated, and the heart could be heard by the stethoscope feebly fluttering. At no time was there any cyanosis or duskiness of the features, but rather paleness of the face; also there was no sweating. On applying the battery over the phrenic nerve and diaphragm three distinct contractions were noticed and then ceased; the pupils became widely dilated and the tongue cold to the touch. Artificial respiration was continued for an hour, but was of no avail. There was no attempt at voluntary respiration at any time beyond the three contractions of the diaphragm. No *post mortem* examination was allowed.

COMBUSTION OF AIR IN COAL-GAS.—At the Edinburgh Chemists' Association, Mr. Cowie recently gave an interesting demonstration of the combustion of common air in an atmosphere of coal gas, and *vice versa* using a glass lamp chimney. The lower end of the chimney was closed with a cork, perforated so that two glass tubes passed through it. One tube was connected with the gas supply, and the other admitted air. On lighting the gas and admitting sufficient air the chimney became filled, and the flame passed from the gas-pipe to the air-pipe, thus showing combustion of air in coal gas. The excess of gas could be lighted at the upper end of the chimney. On reducing the supply of gas, the air again predominated, and the flame passed back to the gas-pipe.

THE ROYAL COLLEGE OF SURGEONS.—Some surprise has been caused by the resolution carried at the Council meeting held on the 12th ult. At a previous meeting of Fellows it was agreed that the Members should be directly represented upon the Council, and it was thought probable that this would be sanctioned. After two hours' discussion it was resolved "That, as the members of this Council represent the body corporate of this Royal College, and consequently its Members as well as its Fellows, it is the opinion of this Council, that no further representation of the Members is desirable." This was, however, only carried by a small majority and two or three members, who are in favour of the Members' representation, were unavoidably absent.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.—We hope to give a report in our next issue of the twelfth Annual Dinner of this Society, which was held on the 5th ult. The illustrated Menu Card, bearing the well-known initials "F. P.," is as amusing as ever. On the front page is a representation of the exterior of the Dental Hospital: in the foreground is a pitiable youth with a fist to his eye and a typical swelling over the region of the first permanent molar. The wording "Rather a Swell Affair," may be taken to also refer to the function of the evening. One of the sketches, entitled "Another case of Scaling," depicts the attempt of a convict to climb his prison wall, and the words "Not in the Strand," complete the pictorial tale. We heartily congratulate the artist on his production this year.

THE X. RAYS. In a paragraph entitled "the New Dentistry," the *Photographic News*, quotes the latest report from Paris (supported by two leading journals) to the effect that an American Dentist there has applied the rays to Dental Surgery. It is stated that the results are most delightful, but the observer will not for the moment say what they are. He declares, however, that tooth-ache is a thing of the past!

Manipulative Miscellany,

It is requested that all new instruments or articles which it is wished to have described under this heading, be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits and without any intention or wish to pit one against another. All makers vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

TABLOIDS FOR LOCAL ANÆSTHESIA.

We have called attention to the method adopted by Dr. Schleich, of Berlin, for producing local anæsthesia by "infiltration" with the hypodermic syringe. Messrs. Burroughs and Wellcome now send us some "tabloids" with which fresh solutions can easily be prepared for this purpose. They are of different strengths.

No. 1.—"Strong" :

| | |
|----------------------|----------------|
| Cocaine Hydrochlor., | ... 1-5 grain. |
| Morph. Hydrochlor., | ... 1-40 " |
| Sodium Chloride | ... 1-5 " |

One "Tabloid" dissolved in 100 minims of water yields the "Strong" solution.

No. 2.—"Normal" :

| | |
|---------------------|-----------------|
| Cocaine Hydrochlor. | ... 1-10 grain. |
| Morph. Hydrochlor., | ... 1-40 " |
| Sodium Chloride | ... 1-5 " |

One "Tabloid" dissolved in 100 minims of water yields the "Normal" solution.

No. 3.—"Weak" :

| | |
|---------------------|------------------|
| Cocaine Hydrochlor. | ... 1-100 grain. |
| Morph. Hydrochlor., | ... 1-40 " |
| Sodium Chloride | ... 1-5 " |

One "Tabloid" dissolved in 100 minims of water yields the "Weak" solution.

OBITUARY.

CHARLES JAMES FOX, M.R.C.S., L.D.S. Eng.

It is with extreme regret that we have to record the death of Mr. Charles James Fox, which took place on January 4th, at the age of 66 years. For many years Mr. Fox was Editor, and for a few years he was part, and for many years sole proprietor of this JOURNAL, which for a great part of that time was the only dental periodical published in the United Kingdom. He was a M.R.C.S., and in 1864 having taken the L.D.S. Eng., a member of the College of Dentists of England. He was one of the early members of the Odontological Society of London, and took some part in the amalgamation of those two bodies into the present Odontological Society of Great Britain, of which he became Foreign Secretary, and, later, Vice-President. As one of the Dental Surgeons of the Dental Hospital of London, he was closely associated with Dental education, but owing to continued ill-health, he resigned that office in 1880. He was the first Dental Surgeon appointed to the Great Northern Hospital, an institution founded in 1856. He was also Dental Surgeon of St. John's and St. Elizabeth Hospital, Consulting Dental Surgeon of the New Hospital for women, Honorary Member Odonto-Chirurgical Society of Scotland, etc.

As a worker in behalf of the interest and advancement of the profession, Mr. Fox was indefatigable, and it was in connection with the Dental Reform movement—especially the later phase of that struggle—that his labours were best known. On the 7th November, 1870 he read a paper before the Odontological Society, on "The Position of Dental Surgery as a Profession," and from that year onwards he advocated in the pages of this JOURNAL his scheme of dental reform. At the Manchester meeting in August, 1875, under the presidency of Mr. Fox, that suggestion took practical shape; indeed the new departure of "Registration and Compulsory Education," became the watch words not only of Mr. Fox, and of his JOURNAL, but also of the Dental Reform Committee. Of that Committee he was the initiator, and its first meeting was held in March, 1876. After its formation Mr. Fox

refused to hold office, believing he could better serve the cause of Dental Reform in the capacity of a journalist, and no doubt his advanced thought, strong independent ideas, and vigorous writings had much to do with the advancement of the professional status and education he had so much at heart. As is well known, the labours of that committee culminated in the Bill which became the Dentists' Act, 1878. He also resigned his membership of the British Dental Association at a very early period. As a recognition by members of the profession, of his services and persistent advocacy of the movement in the pages of the *British Journal of Dental Science*, a testimonial was presented to him. This took place privately in July, 1880. One paragraph in that address was as follows:—"Thinking, therefore, that some record of the circumstances, more permanent than mere spoken words might not be an unacceptable memento of your share in the reform accomplished, we beg to offer for your acceptance this written expression of our feelings, together with the accompanying purse of one hundred guineas, not as in any sense conveying an estimate of the value of the services rendered, but rather as a slight souvenir of our regard."

His worth and labours were appreciated in foreign lands, and he received the following foreign distinctions:—Corresponding Member Odontological Society of Pennsylvania, Corresponding Member Central Society of German dentists, etc., in recognition.

In 1879 and 1880, he suffered much from indifferent health. Shortly after that time Mr. Fox left London, and settled in Ontario, Canada, where he practised his profession. It was there he died; and additional pathos is added to the event by the sad end having been caused by an overdose of chloroform, taken to ease asthmatical spasms, to which for many years of his life he was a martyr.

With the death of Mr. Fox another pioneer of the Dental Profession has been removed; and while a few of his *confrères* are witnessing the grand results of the struggles of those thirty years, it is especially the younger members of the profession who reap the benefits secured by the labourers, such as he whose loss we all regret and deplore.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The last meeting of this Society was held on Friday, March 6th, 1896. The President, Mr. T. G. Read, in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome was given to visitors.

The following gentlemen were then balloted for; they were unanimously elected:—Messrs. Jessop, Humby, and Farndon.

Mr. Stevenson was proposed as a member of the Society, to be balloted for at the next meeting.

Upon Casual Communications being called for, Mr. L. H. CANTON brought forward a case of "*Pyorrhœa Alveolaris*," which he had treated in a woman 32 years of age. The patient was first seen on December 24th, 1894, the lower incisors and canines had a thick deposit of tartar, and were considerably loosened, with pus exuding from the margins of the gums. They were first treated by packing powdered crystals of copper sulphate in the pouches between the teeth and gums. Under this treatment the exudation of pus entirely disappeared from the right lateral and canine, but not from the other teeth. The pouches were then packed with Aromatic Sulphuric Acid, and a mouth wash prescribed. The exudation of pus entirely disappeared under this treatment and the gums retained their normal condition, except the right lateral, which remained perfectly denuded of periosteum. So far the disease was arrested.

Miss HALLIDAY communicated a case of retention of temporary teeth in a boy of 17 years. He had, in the upper jaw a temporary second molar and a canine. In the lower jaw he still retained all the four temporary molars.

Mr. MOORE showed an interesting case of arrested development of the permanent teeth in the lower jaw. The patient, who was nineteen years of age had only three teeth erupted in that jaw, namely the two laterals, and the right six year old molar.

Mr. HARRY ROSE gave an interesting account of the way by which he had overcome the difficulties of taking the impression of a very much undercut lower.

Mr. S. ROSE showed an interesting collection of photographs of microscopical specimens, and the microscopical specimens themselves, belonging to Mr. W. H. Must. Amongst them were Calcification of Polypus of the Pulp, Absorption of root, and Pulp-Stones.

Mr. TATTERSALL showed a model of an upper jaw with a supernumerary tooth, erupted in the region of the right central with two cusps.

Mr. C. BROWNE-THOMAS brought forward a series of appliances, the work of Dr. Martin of Lyons, to replace the upper or lower maxillæ, which were kindly lent to him by Dr. Blaine, L.D.S. Eng., who was Dr. Martin's representative at a previous meeting of the Odontological Society. The method of fitting these he fully explained.

Mr. HARRY ROSE said that they would be more valuable if it was only known under what conditions they were put in ; whether they were put in after a malignant growth had been removed. He put in a similar case for an old gentleman which answered very well, but the patient died about three months after. He would like to know whether the time the patient lived made the appliances worth making.

Mr. FARMER said that he made a case some years ago for his friend Mr. C. W. Glassington, for a case of epithelioma, in which the growth had been removed. The patient lived two years after the operation. He would like to know whether the appliance was liable to cause a recurrence of growth.

The President then called upon Mr. Storey for his paper on "The Treatment of Pulpless Teeth," which is published on page 301.

On the motion of the President a vote of thanks was given to Mr. Storey and those gentlemen who had brought forward Casual Communications.

The meeting then terminated.

STOMATOLOGIÆ DOCTOR.—Dr. W. E. Walker proposes that a new degree, (S.D.) should be instituted for those who complete a compound course of medicine and dentistry.

Dental News.

DENTAL HOSPITAL OF LONDON.

The 38th Annual Meeting of the governors of this Special Hospital was held on Thursday last at the Institution, Leicester Square. Mr. F. A. Bevan a trustee, presided, and among a large number of governors present were Dr. Walker (treasurer) Dr. Hewitt, Capt. H. B. Murray, Messrs. Morton Smale (dean), W. H. Ash, H. Baldwin, Storer Beunett, F. Canton, D. Hepburn, W. Hills, S. J. Hutchinson, E. Lloyd-Williams, Alfred Marsh, W. B. Paterson, W. C. Smale, J. Smith Turner (vice-chairman), and Mrs. E. M. Span.

The report, which was taken as read, stated that the benefits the Charity was able to bestow upon the suffering poor were due to the liberality of the general public, and the medical and dental professions who subscribed towards its maintenance, and the committee expressed both surprise and regret that the Hospital did not receive much greater public sympathy and support. As a reason, it had been suggested that the charitable public failed from lack of knowledge, to comprehend the benefits conferred by the Institution upon the necessitous poor. On an average 200 operations—some of them extending over long periods of time—were performed within the building every working day, all of them were either preventive, palliative, or conservative in character. If that single fact be considered some idea might be grasped of the amount of work done in the Hospital, and of its utility to all classes of the community. The total amount received for the general fund during the year was £2,226, as against £2,248 in 1894. The annual subscriptions amounted to £1,121 as against £1,102 in 1894. The total amount received or promised for the building fund at the end of the year was £12,412. In expressing the warmest thanks for the support already given to the Hospital, the committee ventured to urgently appeal on behalf of the building fund. The necessity for a new building had been more than once described, and it was still a growing necessity, and the chosen site was such as could not be found elsewhere in London. It was so central that the patients, many of whom came and went many times while being treated, could do so at the smallest possible sacrifice of time and money. It was entirely and permanently open to a northern light, and that gave oppor-

tunities for a large number of windows, and a proportionate number of chairs, each of which were as essential to a dental, as beds were to a general, hospital. An increased number of chairs meant more work being done at one time, and that in turn meant a lessening of the time spent in weary waiting by the patients. The freehold of No. 37, Leicester Square has been purchased for £4,000, and £400 has been paid as deposit for the purchase of No. 38, Leicester Square, both of which would form part of the site of the new Hospital. The property now held by the trustees for the Hospital, consisted of the undermentioned freehold, viz.:—Long's-court, Nos. 1 to 5 : Green Street, Nos. 22 and 23 ; Leicester Square, Nos. 35, 35a, 36, 37 and 38 ; St. Martin's Street, No. 37 ; together with the site of the existing Hospital buildings, with the exception of one moiety of the Tower-house, for the purchase of which negotiations were in progress. To enable the committee to make the above purchases, money had to be borrowed from the bankers, and to them there was owing £18,000, as against £19,650 owing at the end of 1894. There was owing to the City bank £3,000 which had been temporarily advanced on the guarantee of the treasurer. In conclusion, the committee acknowledged the obligation they were under to the medical staff, whose untiring labours alone enabled them to carry on the great philanthropic and educational work of the Hospital ; and to the Secretary, Mr. J. F. Pink, the committee offered their best thanks for his services to the Hospital during the past year.

The Chairman, in proposing the adoption of the report and accounts, said ; Ladies and Gentlemen, it gives me very great pleasure to be here this afternoon, and to move the resolution I have just read. Though this is the first time I have had the honour of presiding at the annual meeting, I have for a long time taken a great interest in the Hospital, and as perhaps some of you are aware my father was for a long time treasurer of the Hospital and took a very great interest in it, and, I believe, on several occasions he took the chair at the annual meeting. (Hear, hear.) He was also a tolerably large subscriber, and, therefore, it is from him that I inherit a love of the Institution. (Hear, hear.) I have also been acquainted with several gentlemen who have taken a very active part in it, notably Mr. T. A. Rogers, one of my earliest friends. To come to the Hospital itself and its working, I am sure all you who know the Institution must feel more and more that the premises we now occupy are totally inadequate for the work

being carried on here. (Hear, hear.) Whether we look at the entrance, or the staircase, or the rooms in which the work is carried on, it is perfectly evident we have completely outgrown ourselves, and it is essential for the good of the patients and for the work of the Hospital itself that we should as quickly as possible get into better and more commodious premises. I rejoice to know that considerable progress has been made with a view to this change. (Applause). We have now bought nearly the whole of the block on the same side of the Square, arrangements have been made for taking up a large mortgage upon it, and at no distant date, I hope, we shall really begin to build a new Hospital. (Hear, hear.) I think it only right to say that we feel all very much indebted to my friend the treasurer, Dr. Joseph Walker, for the part he has taken in the matter, for his unfailing zeal and pertinacity, and I trust that at no distant date he may see the work crowned with success for which he has so assiduously laboured for some time past. We do get support, but we do not get sufficient support. (Hear, hear.) I have just had a very pleasing letter put into my hands from the Goldsmith's Company making a donation of £100 to the funds. (Hear, hear). Now if we could get all the City Companies to give in that sort of way it would be a very great help to us. And when we consider the number of persons who derive benefit from this Hospital, I really am surprised that the donations and subscriptions are not much larger than they are. Speaking for myself I know scarcely a day passes that I have not an application from somebody for a letter for the Dental Hospital, and very often I have two or three or more in a day. If I have these applications no doubt it is the same with other subscribers, and that at least shows how thoroughly the Hospital is appreciated and how many must know about it; and if all who have benefited by it would only make it known to their friends, I believe we should soon have the funds sufficient for building this new Hospital and carrying on the work under much better better circumstances. (Hear, hear.) One would think, as everybody must I suppose have more or less suffered with their teeth; that everybody would have sympathy with a work of this kind. It must appeal, I should have thought, to a larger number even than General Hospitals, but I suppose it is thought that the whole thing costs very little, and that there is not much need of help. If only we could get persons to understand the situation in which we are placed, and if those who are interested in the Hospital

would come to it and see what a crowded condition we are in, I do believe they would at once say "Well, we will take care that the work shall be carried on more efficiently." Of course, the principal object of our meeting is for the sake of the public at large, and all I can say is that the more I know the work the more I shall take an interest in it. (Hear. hear). I shall hope to give my friend, Dr. Walker, something more as he gets on towards the carrying out of his grand scheme. (Applause.)

Mr. Hepburn, in seconding the motion, said that while thankful for the support accorded to the Hospital, they could not but feel that the sympathy of the public might be with them a little more than it was. It was rather difficult to understand why subscriptions did not fall in more readily to the Institution, but he trusted when the public knew of the efforts being made to rebuild the Hospital they would come forward with liberal support.

The report was then unanimously adopted.

Certain retiring members of the committee having been re-elected, on the motion of Mr. Hutchinson,

Mr. W. H. Ash proposed, Mr. Storer Bennett seconded, and it was agreed, to add the names of Dr. F. W. Hewitt and Capt. H. B. Murray to the committee.

Mr. A. Marsh had great pleasure in proposing the re-election of their treasurer, Dr. Joseph Walker, and remarked that they could not sufficiently thank him for his past services.

Mr. Ash, in seconding the proposition—which was carried—stated that since Dr. Walker has been associated with the Hospital, he had worked very hard indeed in its interests, and he had no doubt the meeting unanimously would re-elect him.

Dr. Walker, in reply, said he regarded it as a great honour to be treasurer of the Dental Hospital, for although it gave him many nights of anxiety and sometimes sleeplessness, he could promise that he would do his very best for them both financially and by hard work. He was quite willing to resign the trusteeship or the treasurership at any time they thought a younger man would be of better service to the Institution.

The auditors having been re-elected,

Mr. Hepburn proposed a vote of thanks to the treasurer, the chairman, the deputy-chairman, the committee of management, the finance and election committees, and the medical staff. He said they all knew how hard the treasurer worked

for the Institution, and the chairman was also a most assiduous worker. Their deputy-chairman was well-known to them and they felt that so long as Mr. Turner was associated with the Hospital they had in him a great source of strength. As regarded the committee they were always ready to devote their time to the best interests of the Charity. He could hardly speak in high enough terms of the medical staff. A short time since he was a member of that staff, and therefore knew something of their work, and he could only say he thought even the committee, let alone the public outside, hardly realised what the medical staff went through in carrying on the work of the Hospital. They came down in overcrowded stuffy rooms, and had to deal with very trying cases under the most difficult conditions possible, and they could not feel too grateful to them for the hearty manner in which they carried on the work of the Charity. Indeed the only wonder was that with the crowded state of the building, and all the inconveniences they had to put up with they could find men loyal enough to give their services to the Hospital.

Mr. E. Lloyd Williams seconded, and the motion was carried.

Dr. Walker, in replying to the vote, said that if one looked back a few years and noted the progress which the Hospital had made they could but be hopeful for the future. He wished to propose a vote of thanks to the Chairman for presiding, and to say how much assistance Mr. Bevan had given him as his co-trustee. (Hear, hear.) He also entered very heartily and thoroughly into all the proposals that the committee had made for the rebuilding of the Hospital.

Mr. J. Smith Turner, in seconding the motion—which was carried—remarked that one important fact in connection with last year's work was that while the number of stoppings had increased the number of extractions had decreased. That fact alone ought to raise the estimation of the Hospital very much in the eyes of the public.

The Chairman briefly responded, and the proceedings terminated.

THE FORMATION AND STRUCTURE OF ENAMEL.—Dr. J. Leon Williams is now publishing in the *Dental Cosmos* a series of papers upon this subject, the substance of which was read before the Royal Society of Great Britain last December.

APPLICATIONS IN BANKRUPTCY FOR DISCHARGE.

In both these cases the necessity for Dentists keeping proper books is alluded to.

Before Mr. Registrar Hope. In re Large.

Mr. H. Brougham appeared as Official Receiver ; and Mr. T. E. Crocker as solicitor for the debtor.

The evidence and the report of the Official Receiver showed that the debtor began business in May, 1886, as a surgeon-dentist at Notting-hill Terrace. He attributed his failure mainly to the fact of a judgment for £50 damages, and £145 costs, having been recovered against him in an action for breach of promise of marriage. He stated that his own costs in defending the action amounted to £141, towards which he paid on account £85, part of which he borrowed. No part of the amount due on the judgment was paid, and the plaintiff in the action had lodged a proof for £200 in respect of it. The debtor's former solicitor had also proved for £61, the balance of his costs. It appeared that the receiving order was made so long since as October 11, 1886, and the only offence charged by the Official Receiver in his report was that the debtor had omitted to keep such books as were usual and proper in the business carried on by him. The liabilities were returned in the accounts at £408, and the Official Receiver stated that nothing had been realized from the assets.

Mr. Crocker submitted that it was unnecessary for a dentist to keep books, but the Official Receiver pointed out that the debtor was a manufacturing dentist, and sold goods.

His Honour said that the offence was a purely technical one, and, taking into consideration the fact that the debtor had been undischarged for several years, the order applied for would be granted subject to a suspension of three weeks only.

At the Northallerton County Court, before his Honour, Judge Turner, George William Hammond, dentist, of 44, North-street, Ripon, applied for his discharge from bankruptcy.

The Official Receiver (Mr. J. R. Stubbs) stated that the bankrupt filed his own petition on the 20th May, 1890. At

his public examination the bankrupt admitted that he owed to unsecured creditors, £142 14s. 9d., and to preferential creditors £14 6s. 10d., while his assets were estimated at £40, less £12 10s. for preferential claims, leaving deficient £115 4s. 9d. As a matter of fact the asset realized £45. The bankrupt asserted that his income had been about £100, but that his bankruptcy was due to his expenditure exceeding his income. The bankrupt had neglected to keep such books as would disclose his position within three years immediately preceding his bankruptcy, while he had contracted debts without having any reasonable or probable ground of expectation of being able to pay them. His bankruptcy had been brought about by extravagance in living.

His Honour said the bankrupt had not kept proper books, but exonerated him from the charge of extravagant living. He granted the discharge, but suspended the certificate for 12 months.

DENTISTRY AND ITS DIFFICULTIES.

SHEFFIELD COUNTY COURT.

Before his Honour Judge Ellison.

An action was brought by Mr. Frank Harrison, surgeon-dentist, of Glossop road, against Mrs. K. Kenworthy, residing at 113, Kensington terrace, Oakbrook road, for 13 guineas, the price of a set of teeth supplied her last November. Mr. Wilberforce (instructed by Mr. C. Robinson) appeared for the plaintiff, and Mr. W. E. Clegg for the defendant.

On her visits to the plaintiff's house defendant was seen and attended to by Mr. Allen, a qualified assistant. A set of teeth was made for the defendant, but on the ground that they pained her, and that she could not wear them, she sent them back, and declined to pay.

Plaintiff's case was that the fit was a good one, and that defendant did not wear the set long enough to enable the usual irritation to pass away.

His Honour suggested, as the point was a difficult one for him to settle, that the merits of the teeth should be judged by two disinterested dentists, and the parties' solicitors agreed to an adjournment for a month to enable this to be done.

AN ACTION AGAINST AN EXETER DENTIST.

At Exeter County Court, Charles Bernard Courtenay Thomas, of 55, St. Aubyn-street, Devonport, sued George Frederick Passmore, of Exeter, surgeon dentist, for £4 10s, the value of a set of teeth, in payment of rent for the use of a board on his advertising station at Devonport Market. Plaintiff, who was loaded with documents and books, conducted his own case ; Mr. Skardon, Plymouth, for defendant. The latter stated that the claim formed part of a case which was thoroughly gone into at Stonehouse County Court about four years ago, when plaintiff was non-suited. Plaintiff's allegation now was that defendant's manager gave instructions as to advertising, and failing payment of the account, and the misfit of a set of teeth, which it appeared, were not supplied by defendant, he brought the present claim.

Defendant absolutely denied giving any instructions as to advertising, and stated that he was precluded as a dentist from doing so.

His Honour gave a verdict for defendant, with costs.

Mr. Thomas, on March 17, at Exeter County Court applied for a new trial of the action he brought against Mr. Passmore, to recover the value of a new set of teeth. The case was tried at the last court, plaintiff alleging that defendant's manager agreed to supply him with a new set of teeth in lieu of payment for an advertising station. The teeth did not fit and were returned, but no recompense was given. Mr. Thomas put in several documents referring to advertisements in newspapers.

His Honour, Judge Edge, said it would have to be proved that defendant's manager gave orders for these to be inserted, and that defendant was personally cognisant of the fact that they appeared.

Mr. Passmore said he knew nothing about the advertisements, and repudiated all liability in the matter.

His Honour said even if he granted a new trial, defendant might plead the statute of limitations, and Mr. Thomas would then be landed in extra costs for nothing. He, therefore, refused a new trial.

Mr. Passmore : Cannot I claim some protection ? This man has worried me since 1891.

His Honour : I don't think you will hear any more about it.

THE DENTAL BOARD OF VICTORIA.

A special meeting of the Dental Board of Victoria was held on the 20th December, 1895, at Melbourne.

The Chief Secretary replied to the Board's recent letter, and stated in his reply that "the Chief Secretary fully intends to introduce amending legislation next session, and will give full consideration to any recommendations the Board may make on the subject of the professional training and examination of candidates for registration as dentists."

Mr. Iliffe moved that the letter be received, and that the Board proceed to prescribe text-books, and to discuss details of examinations. Dr. Springthorpe seconded the motion, which was carried.

Mr. Iliffe then moved that the following be the text-books prescribed by the Board for the year 1896; Dr. Springthorpe seconded the motion, which was carried.

For Written Examinations:—

1. Chemistry and Metallurgy as applied to Dentistry.—Chemistry—Roscoe, those portions dealing with articles used in Dentistry. Metallurgy: Fletcher's Dental Metallurgy.

2. Dental Materia Medica and Therapeutics—Stocken's Dental Materia Medica and Therapeutics.

3. General Elementary Anatomy and Physiology—Huxley's Physiology.

4. General Elementary Surgery and Pathology—Dr. Green's Pathology, chapters i, ii, iii, iv, v, x, xi, xii, xiii, xvi, xvii, xxv, xxix, xxx, xxxvi, xlvii.

5. Dental Anatomy and Physiology—C. S. Tomes' Dental Anatomy, first five chapters.

6. Dental Surgery and Pathology—Sir John Tomes' Dental Surgery, edited by C. S. Tomes.

For Practical Examinations:—

Practical Chemistry—Bowman's, those portions dealing with dental materials.

Sub-section *b*—Tomes', as above.

Sub-section *c*—Tomes', as above.

Mechanical Dentistry and Dental Metallurgy:—Richardson's Mechanical Dentistry and Fletcher's Dental Metallurgy. The Board to reserve to itself the right to alter the text-books at any future date on giving due notice thereof.

UNREGISTERED DENTAL PRACTITIONERS' ASSOCIATION OF GREAT BRITAIN, LD.

This Company was registered on February 28th, with a membership of 1,000 (each of whom is liable for £5 in the event of winding up), with objects as fully indicated by the title. The management is vested in a council. Registered office, 6, King street, Oldham.

The half-yearly meeting of the Scottish Branch, affiliated with the Unregistered Dental Practitioners' Defence Association, was held in the Christian Institute, Glasgow, on Feb. 26th. Mr. Smith, Vice-President of the Branch, occupied the chair. Following the adopting of previous meetings' minutes, the secretary, Mr. A. D. Reid, Perth, gave a statement of the business transacted at the half-yearly meeting in Manchester. Then it had been resolved to alter the name to the Unregistered Dental Practitioners' Association of Great Britain. The officials were endeavouring to get the association registered under the Joint Stock Companies Act. The Bill was being drawn on similar lines to that of the National Herbalists of Great Britain. If this attempt was successful, members were safe under the law, as any member of the association could place up the words "Dental Practitioner" over his door, and run no chance of prosecution. At the end of the present month the books of the association would be closed, and on re-opening the entrance fee would be five guineas, instead of two guineas as at present.

It was intimated that the association had been approached by members of the Glasgow Trade Council, with a view to the Defence Association becoming incorporate with that body.

It was unanimously agreed to.

It was also stated that the British Dental Association, Glasgow Branch, had appointed a vigilance committee.

The *British and Colonial Druggist*, from which we take the above, says that if the secretary of the Unregistered Dental Practitioners' Association is correctly reported, he is giving his members very dangerous advice, in stating that if the Association registers as a joint stock company any of its

members could exhibit the title "Dental practitioner." Any unregistered person doing so will find that the law draws a very strict distinction between the privileges of companies, as a whole, and of their individual members.

DISCOVERY OF PLATINUM.

The *Australian Journal of Pharmacy* states that a discovery of deposits of platinum was made a short time ago at Fifield, about 26 miles north-east of Condobolin. The lead is a little over a mile in length, and varies in width from 60 to 150 feet. The metal is found chiefly on the bedrock and the drift 3 inches above it. Nuggets weighing up to 5 pennyweights have occasionally been met with, while the yield per load is from 5 pennyweights to 12 pennyweights of crude metal, and contains about 75 per cent. of platinum, which realises 24s. per ounce on the field. The lead has already yielded 1,200 ounces of platinum, and about 7,000 loads are dumped at the surface, awaiting treatment.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

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NOTES UPON DENTINE AND ENAMEL.*

By CHARLES S. TOMES, M.A., F.R.S.

During the past year a very interesting series of papers have appeared in the *Dental Cosmos* from the pen of Dr. Black, in which, amongst other things, he has endeavoured to ascertain the nature of that difference between teeth of good and bad quality which is recognised as existent by every dentist of any experience.

The idea generally has prevailed that, just as occurs in ricketty bones, there was a deficiency in lime salts in teeth of poor quality ; and but little had been done in the way of actual experiment towards the determination of this point, although Dr. Black appears to have overlooked the valuable papers of Dr. Galippe, who was the first in the field in experimenting.

Dr. Galippe's experiments were undertaken with whole teeth, which was in some degree unfortunate, as it was always possible that differences in some of the tissues might be more or less completely masked by their not being common to all ; moreover, he adopted the method of ascertaining the specific gravities of the teeth, which, according to him, corresponded in a rough way with the proportions of lime salts present.

According to Dr. Galippe ("Recherches sur les Propriétés Physiques des Dents," Société de Biologie, 1884) the milk teeth have a lower specific gravity than their successors,

* Read before the Odontological Society of Great Britain.

and also differ in containing a larger percentage of carbonates ; the roots of teeth also have a less specific gravity than their crowns, and he also believes that their density increases with age. He also holds that teeth of the right side have a slightly greater density than those of the left, and molars a greater than incisors.

When Dr. Black's researches were undertaken, little beyond this was known as to the constitution of teeth, and they hence constitute a valuable contribution to the subject.

His investigations covered a great deal of other interesting ground, but for the present I am concerned with one aspect of the question only, namely, that of the chemical constitution of the teeth.

Dr. Black procured teeth from mouths where the teeth were conspicuously free from caries, and from others where the teeth were decidedly carious, and adopted a uniform method of examining them. He cut transverse slices from the necks of the teeth, considering that in that position his results would be but little interfered with by the presence of enamel or cementum, and that they would therefore give good comparative results.

The slices were dried for an adequate length of time at a temperature of 100° C., and then incinerated, first on gauze and then in a platinum crucible, and the loss of weight set down as organic matter.

I have elsewhere (*Journal of the British Dental Association*, 1895) given grounds for thinking that the technique adopted was not calculated to give the most accurate results, which could have been obtained ; nevertheless his results are set out in his tables with a degree of minuteness which far transcends the possibilities of experimental accuracy, even had the technique been as perfect as could be. Still the broad results are, I think, quite trustworthy, and, at all

events, striking out the decimal places, may be accepted as accurate.

Dr. Black's results give as a general average 72 per cent. of lime salts (leaving out as untrustworthy his second place of decimals), and, which at first strikes one as remarkable, he found no deficiency in lime salts in the teeth of imperfect quality. This led me to undertake a series of check experiments, endeavouring to eliminate every source of error of which I could think.

In order to get dentine, and dentine only, the teeth were sawn across at their necks, and as much dentine as could be got without danger of contamination with enamel or cementum, cut out with spear-headed drills and collected as fine turnings.

These were dried in a constant temperature for over eight hours at 100°C., weighed in a platinum crucible, ignited in a muffle, and weighed again. The ash was then moistened with ammonium carbonate, in order to restore any carbonic acid which might have been driven off by ignition from the carbonates present, then dried and weighed again. The general result was an average of 72.5 per cent. of lime salts. In these experiments the turnings remained from first to last in the crucible, so that there was no chance of loss, and the amount of dentine obtainable from each tooth was quite twice as much as the quantity experimented with by Dr. Black, this, again, of course, tending to diminish error.

One of the most surprising statements in Dr. Black's paper is that teeth taken from the same mouth differ in the percentage of lime salts more largely than do teeth of good and bad quality. This seemed so unlikely, that I took four or five jaws in which all, or almost all, the teeth were present, and estimated the salts in each tooth, or in each pair of teeth. As I soon found that the two central incisors, two lateral, or any other pair of teeth gave pretty closely the same result,

I am inclined to think that Dr. Black is mistaken in supposing that these differ, and that the difference is due to experimental error. I therefore in my later experiments mixed the turnings from each pair of teeth, so as to get a larger quantity to deal with. The following are some of my later results.

(1) A perfect dentition (upper jaws) in which M^3 is not yet erupted.

| | Percentage of lime salts. | | |
|------------------|---------------------------|-----|------|
| Central incisors | ... | ... | 70.0 |
| Lateral incisors | ... | ... | 69.7 |
| Canines | ... | ... | 70.8 |
| Bicuspid | ... | ... | 72.0 |
| First molars | ... | ... | 72.7 |
| Second molars | ... | ... | 72.9 |

(2) A perfect dentition in which only one wisdom tooth is erupted.

| | | |
|------------------|-----|-----------------------|
| Central incisors | ... | 64.5 (probable error) |
| Lateral incisors | ... | 72.9 |
| Canines | ... | 72.8 |
| First bicuspid | ... | 74.8 |
| Second bicuspid | ... | 74.8 |
| First molars | ... | 74.6 |
| Second molars | ... | 74.5 |

(3) Perfect dentition, a good deal worn.

| | | |
|------------------------------------|-----|------|
| Right central and lateral incisors | ... | 70.5 |
| Left central and lateral | ... | 70.4 |
| Right canines | ... | 72 |
| Left canines | ... | 72 |
| Right bicuspid | ... | 72.7 |
| Left bicuspid | ... | 72.8 |
| Right molars | ... | 72.3 |
| Left molars | ... | 72.3 |
| Right and left wisdom teeth | ... | 71.8 |

(4) Nearly perfect lower dentition. Instead of making an ignition the dentine turnings were subjected to the action of strong nitric acid, and heated so as to drive off the acid. This left a perfectly white ash, which was treated with ammonium carbonite, to restore any lost carbonic acid.

| | | |
|------------------------------|-----|------|
| Central and lateral incisors | ... | 75.6 |
| Canines | ... | 75.6 |
| Bicuspid | ... | 75.3 |
| First molars | ... | 79.3 |
| Second molars | ... | 77.2 |
| Third molars | ... | 77.0 |

It will be seen that these percentages are higher, probably owing to the retention of some water. As a matter of fact, ignition subsequently brought down the percentage of the molars to 73, but owing to an accident to the muffle the others were lost.

(5) The incisors much grooved; two bicuspid and one wisdom tooth deeply carious; slight interstitial caries upon many of the teeth.

| | | |
|------------------------------|-----|------|
| Central and lateral incisors | ... | 70.9 |
| Canines | ... | 71.2 |
| Bicuspid | ... | 71.2 |
| Molars (first) | ... | 72.1 |
| Second molar | ... | 71.9 |
| Third molar | ... | 72.0 |

It will be noticed that in this, the only series of imperfect teeth examined, the percentages rule lower than in the others, and this, so far as it goes, does not confirm Dr. Black's conclusion that teeth of poor quality are quite as highly calcified as those of good. But, on the other hand, the differences are small, and a single series does not establish much, so that this question must be left still *sub judice*.

It is suggested by Dr. Black, that the difference between good and bad teeth is, probably, to be sought in the organic

matter ; there are, however, other possibilities. Thus, it may be in the proportion of combined water, or in the proportion of the different lime salts present, as, for example, in a greater proportion of carbonates. This, however, is a point very difficult to determine, as the estimation of carbonates present in very small quantity is open to much experimental error. Or, again, it is conceivable that the dentine may be identical, but the enamels different.

But there is one point which my investigations bring out very plainly, and that is, that the molars and bicuspid are more highly calcified than the incisors and canines.

Taking the averages from all the ignitions which I have performed, there comes out this result.

| | | Percentage of salts. |
|----------------------|-----|----------------------|
| Incisors and canines | ... | 71·5 |
| Molars | ... | 73·2 |

Upon returning to Dr. Black's published tables and getting out the incisors and molars, I found these averages:—

| | | | |
|----------------------|-----|-----|------|
| Incisors and canines | ... | ... | 71·7 |
| Molars | ... | ... | 72·3 |

I should say that in making comparison with Dr. Black's figures, which are percentages of wet dentine, I have corrected them into percentages of dry dentine, as all chemists are in the habit of giving analyses of substances deprived of free water. Thus, though Dr. Black has not noticed it, his figures serve to confirm my result, and it may be taken as pretty well established, the more so as Dr. Galippe's specific gravity experiments on entire teeth point to the same conclusion.

It would be interesting (and I intend to investigate the point) to know if this is general throughout the animal kingdom. But, as ivory is known to contain a specially low percentage of salts, I compared the salts contained in it and in the dentine of an elephant's molar, with the following result.

| | | |
|----------------------------|-----|------|
| Ivory (tusk) | ... | 57·5 |
| Dentine of elephant molar | ... | 70·2 |
| Cementum of elephant molar | | 67·0 |

Thus, then, whilst ivory is very rich in organic matter and water, the dentine of the molar differs little from human dentine. The tusk, which requires elasticity, but is little subject to attrition, has few lime salts, and the dentine of the molar which is required to be hard—harder than the cementum—is highly calcified ; and the cementum stands between the two in this respect.

Passing from these examinations which were all carried out upon the line of destruction of the organic matrix, I approached the matter from the opposite direction, and dissolved out all the salts by the careful use of dilute acids.

The decalcified matrix was carefully washed and dried and then weighed. This gave a result at first sight not consistent with the ignition experiments.

Thus in the case of ivory :—

| | | |
|--------------------------------------|--------|-------|
| Lime salts (ascertained by ignition) | | 57·5 |
| Dry collagen | | 34·0 |
| Deficiency | | 8·5 |
| | | <hr/> |
| | | 100·0 |

This deficiency was ascertained to be water in combination, that is to say, water which could not be dried out.

Other experiments gave as much as 9·5 per cent. of water ; if this latter figure be correct, there is an amount of water in ivory sufficient to form three equivalents in combination with the tribasic calcium phosphate, the formula of which would be $\text{Ca}_3 \text{P}_2 \text{O}_8, 3 \text{H}_2 \text{O}$.

It is of course well known that calcium phosphate prepared by wet processes, always contains one or more equivalents of water, the last of which is only lost at red heat.

A similar course of procedure with human dentine gave

| | | | |
|--------------------|-----|-----|-------|
| Salts | ... | ... | 72·0 |
| Collagen | ... | ... | 19·6 |
| Deficiency (water) | .. | .. | 8·4 |
| | | | <hr/> |
| | | | 100·0 |

Now one equivalent of water in combination with the calcium phosphate, supposing that all the 72 per cent. of the salts were calcium phosphate, which of course they are not, would require 3·9 per cent., so that there is not enough to form three equivalents of water.

There are great discrepancies in analyses of dentine, but all agree that there is some carbonate, and some magnesium phosphate, reducing the percentage of calcium phosphate down to 67 or 68 per cent. or according to some, even lower; if that be the true proportion of calcium phosphate, the water is not far off the quantity required for three equivalents.

Hence, I am inclined to believe that in dentine the calcium phosphate holds, in chemical combination two or three equivalents of water. But the definite determination of this point would need more careful analyses of rather large quantities of dentine.

But at all events this is clear, that the analyses of dentine as usually set out are wrong, in that a good deal of water is set down as organic matter, and that instead of setting down the combination of ivory as—

| | | | |
|-----------------|----|----|----------------|
| Lime salts, &c. | .. | .. | 57·5 |
| Organic matter | .. | .. | 42·5 per cent. |

We ought to write—

| | | | |
|----------------|----|----|------|
| Lime salts | .. | .. | 57·5 |
| Organic matter | .. | .. | 34·0 |
| Water | .. | .. | 8·5 |

or

Organic matter, and water in chemical combination 42·5

The collagen obtained was boiled for some time in water acidulated with acetic, or weak hydrochloric acid; this brought the collagen into solution, partly changing it into gelatine, and left an insoluble residue of flocculent appearance which consisted, as determined by microscopic examination, of Neumann's sheaths in a detached condition.

This residue, consisting, as shown by chemical tests, of elastin, was found to constitute as much as 1·2 per cent. of the entire dentine in the case of ivory, and therefore formed quite 3 per cent. of the dried collagen.

Before leaving the subject of dentine, I may mention that some tooth pulps from a calf were dried and ignited; the dried pulps were found to contain 10 per cent. of lime salts, mostly phosphates; there is then in the pulp a rich store of lime to draw upon for the purpose of calcification.

Blood plasma contains about ·8 per cent. of salts, but these do not largely consist of phosphates; dried blood plasma would contain a total of about 8 per cent. in round numbers.

My observations upon enamel have been already published elsewhere, in the *Journal of Physiology*, but I may mention that I have found it to be practically an inorganic tissue; the small percentage which has usually been set down as organic matter being, in fact, mainly water, and the organic matter present being only in the most infinitesimal proportion—far too little for quantitative estimation.

Just as in the case of dentine, it is probable that the calcic phosphate has an equivalent of water combined with it, and this is driven off with such suddenness, just before red heat is reached, as to make the enamel fly about.

An average analysis of enamel from an elephant's molar would give—

| | |
|------------------------------------|-------|
| Lime salts, &c. | 94.51 |
| Water and traces of organic matter | 5.49 |

Calcining enamel leaves its structure but little altered. If it be not carried beyond bright redness for ten minutes or thereabouts, the enamel prisms still remain quite distinct and unaltered in size or form. They do, however, acquire a greater opacity, and a slightly granular appearance, so that it seems as if the driving out of the combined water had altered the crystalline structure.

It has long been known that the shells of certain molluscs present a prismatic structure not unlike that of enamel, and the shell of the large mussel *Pinna* is a fine example of this.

Thinking that it might throw some side light upon the structure of enamel, I examined the *Pinna* shell, in which the calcifying material is carbonate and not phosphate of lime, and in which the prisms are of great size.

The prisms of *Pinna* present a further resemblance to those of enamel in that the individual prisms show a transverse striation, which has been beautifully brought out in a photograph, which was taken by Mr. Mummery.

A careful examination of these large *Pinna* prisms seems to indicate that the striation is due to regularly recurring varicosities of the prism. This tends to confirm the view more recently advocated* as to the cause of striation in human enamel—a view which is adopted by Mr. Leon Williams, and is illustrated by the very beautiful micro-photographs which he has been kind enough to lend me for exhibition here this evening.

On decalcifying *Pinna* shell I found that the organic residue forms a conspicuous and bulky mass, swelling up considerably when the lime is removed.

Yet this conspicuous and bulky mass proves to amount to

* "Dental Anatomy," Tomes, 1894, p. 17.

only 1 per cent. of the weight of the shell, which is a confirmation of the conclusion that there is practically no organic matter in enamel, which, as is well known, wholly disappears on decalcification. An analysis of Pinna shell gives,

| | | | |
|----------------|----|----|------|
| Lime salts | .. | .. | 89.2 |
| Organic matrix | .. | .. | 1.3 |
| Water | .. | .. | 9.5 |

The organic residue has the appearance under the microscope of a delicate connective tissue. In order to investigate more satisfactorily its arrangement I ground a section transverse to the prisms, and cemented it down to a slide with canada balsam.

This was carefully decalcified, a little ferric chloride being added to the fluid; after washing it was treated with tannin solution, with the result that a beautiful honeycomb, corresponding exactly to the appearance of a simply ground section was obtained, except only that the strongly refractive material which constituted the prisms was wholly gone.

It was thus shown that the Pinna shell consists of crystalline prisms of calcic carbonate containing no organic matter in themselves, but deposited in a honeycomb of connective tissue.

I should have mentioned that in a transverse section of shell the interstitial substance between the prisms is of material width, and the interstitial substance between enamel prisms of course is not.

A section of enamel was then treated in precisely the same way, with the result that nothing whatever could be distinguished upon the slide—all had disappeared.

In the absence of definite knowledge, save that a trace of interstitial matter can be stained in sections of human enamel (Bödecker and Heitzmann), and that a similar tissue can be

demonstrated in epithelium—moreover that a trace of mucin can be got from enamel, as I have shown in the paper referred to above—it seems a legitimate speculation that enamel may be formed on lines somewhat analogous of the Pinna shell, namely, that the lime salts may be deposited in the interior of the enamel cells, and so a definite pattern produced, their exceedingly delicate walls playing the same part as the connective tissue honeycomb in the shell, and that the comparative absence of organic material in the finished product may be due to their exceeding tenuity as well as to the absence of organic matter from the prisms themselves, which are purely crystalline.

Such an explanation seems to me to fit in with all known facts, and serves to easily account for the complex arrangement of the prisms in definite patterns which would, on ordinary excretion views, be a little difficult.

My own analyses, and this view if it be true, afford an explanation of enamel structure quite at variance with that held by Heitzmann and Bödecker (which indeed the analyses alone seem sufficient to refute), and they fit in well with the explanation offered by Klein of the microscopic appearances.

And although the subject requires much more investigation, it seems very possible that the difference between good and bad teeth may reside principally in the enamel. We know that enamel formation is very sensitive to health disturbances, inasmuch as these become written upon it in the form of lines of imperfect structure when acute illness has happened during its deposition, and we know also that in teeth of poor quality it is easily cut and is friable, so that we have a difficulty in getting good edges to our cavities. But while it is tempting to indulge in what the late Professor Tyndall called the scientific use of the imagination, I would not be understood to build too much upon anything which goes far beyond a demonstrable experimental basis.

It is said by Dr. Galippe that entire teeth contain about .4 per cent. of silica, but this point I have not so far investigated sufficiently to enable me to speak with any certainty. If, however, it be present, I am inclined to think that it is only in smaller traces.

ART METAL WORKERS.*

By FRANK HARRISON, L.D.S. Ed., M.R.C.S., Eng.

Illustrated with Lantern views of works by the early
Florentine Masters.

The title of this paper was suggested to me by my friend, and your energetic secretary, Mr. David Headridge, at the Preston meeting of the British Dental Association.

Mr. Carter, of Leeds, had said that it seemed to him that this was an age when the examination of students was done to death, and cited a case of an acquaintance of his, who had twice failed in his preliminary examination, although he could do very good work. Two such cases are well known to me, and I have no doubt that many of you might be able to add similar experiences.

This led me to say that I had noticed at school that it was often boys with little knowledge, but with a facility for expressing what little they knew, who most easily satisfied the examiners—"took all the prizes and were puffed up as great fellows." Those who failed in the literary examination were often the best mechanics. It was the boys who frittered away their time at school in cutting desks and interfering

* Read before the Manchester Odontological Society.

with mechanical things who often turned out the best practical men. Such statements being made and received without denial, it has occurred to me that we might spend a profitable evening in considering this question of pupilage, especially as affecting the status of our profession in the rapid evolution which is going on at the present time.

We must not forget that, as dentists, we are essentially metal workers, and we should be proud of that fact.

Only a few years ago, previous to our having assimilated a little learning in the therapeutics of certain germicidal agents, and before the introduction of the rubber dam, the only surgical operation dentists were called upon to perform was the removal of some offending tooth, and the adaptation to the jaw of a splint to carry artificial substitutes.

Far be it from me to say one word to detract in any way from the useful and elaborate art work which is being done by our experts in gold filling and crown work, but my point is that it is art metal work, and that it should rank as such, and the worker should not lose sight of his equally sincere fellow craftsman, the mechanical assistant.

Too many, I fear, imagine that when one of the several Colleges of Surgeons has conferred the title of L.D.S., that it is equivalent to being made a Master of the Art of Dentistry, and parade their cock tail for the admiration of those less fortunate birds who have not attained that peculiar distinction. As metal workers we should be ever ready to develop and understand the ethics and characteristics of the metals which we have to employ. It is no great credit to the advanced dentists that they are dependent upon a company of empirics to supply them with a secret preparation under such appellations as "Flint-edge Gold Alloy," "Metallic paste Stopping," "Liquid Gold," &c.

To-day I fear too much of the evil renaissance spirit is abroad, and the disposition is to lean rather to mart work than

to art work. Such influences have before been at work, and are matter of tragic history of nations and people. "They be best chirurgeons, who being learned, incline to the traditions of experience, or, being empirics, incline to the methods of learning."

The ethical effect of being brought into close contact with the peculiar properties of metal such as is acquired in the correct manipulation of these elements for the good services of mankind has its marked influence upon man. The ready wit, the sterling honesty, the brusque bearing, but the kind heart of the Sheffield cutler cannot escape even the most casual observer. The neat, tidy and gentlemanly bearing of the designer and worker in silver was equally noticeable in Old Sheffield.

In order that I may not weary you with too much shop, because I know full well that it is rather your wish to rise above such narrowness in your meetings, I intend to ask your attention for a little time to look at some interesting history of some of the old metal workers at a time when the world was producing some of its highest-souled work, and to note particularly the effects of their early training.

Seeing that our present system of mechanical art training is recognised on all sides to be a failure, I am going to try to correlate some facts of the training of the Florentine Painters who, curiously enough, and very usefully for my argument to-night were also expert art metal workers, and received their first training as such.

While considering these interesting facts, I shall at the same time, try to focus the light of thought of the greatest art critic and friend of all art workers, Mr. Ruskin, upon the subject of art teaching, which will be found to apply equally to the peculiar art work in which we are interested.

Before considering in detail the Florentine Painters, let me quote a few of Mr. Ruskin's thoughts upon the important

subject of Mastership. From *Ariadne Florentina*, p. 53,—
 “We are in the habit of speaking of men who form a great number of pupils, and who have a host of inferior satellites round them, as Masters of great schools. But before you call a man a Master, you should ask, Are his pupils greater or less than himself? If they are greater than himself, he is a Master indeed, he has been a true teacher. But if all his pupils are less than himself, he may have been a great man, but in all probability has been a bad master, or no master.”
 Niccota Pisano (sculptor, architect) taught all Italy, but chiefly his own son, who succeeded him, and in some things very much surpassed him. Orcagna, also a sculptor and architect, and son of a distinguished metal worker, taught all Italy after him down to Michael Angelo. Lippo taught Sandro Botticelli; and Verocchio, a great art metal worker of whose work I shall give you some examples, taught Leonardo da Vinci, Lorenzo di Credo and Perugino. They did nothing but what was lovely, and taught only what was right.

The chronological list of the Florentine Painters is as follows :—

Cimabue (1240). Giotto (1276-1336). Andrea Orcagna (1308-1368). Fra Angelico (1387-1455). Benozzo Gozzoli (1420-1478). Fra Lippo Lippi (1406-1469). Filippino Lippi (1457-1504). Sandro Botticelli (1446-1510). Andrea Verocchio (1435-1488). Perugino (1446-1524).

Seeing however, that I am dealing more particularly with the metal workers and studying the painters only incidentally, it is obviously necessary for other reasons also that I must considerably reduce this list, but at the same time modify it by introducing the Robbias, the famous porcelain workers, Ghiberti, the bronze worker, Ghirlandio, the garland maker, and Donatello.

The order then will be as follows :—

1, Orcagna. 2, Benozzo Gozzoli. 3, Botticelli. 4, Della

Robbia. 5, Ghiberti. 6, Ghirlandio. 7, Verocchio. 8, Donatello.

I take Orcagna first, although he was a sculptor and architect and not strictly a metal worker, yet he was one of the greatest of Florentine teachers, and his father Cione was an unrivalled goldsmith.

With regard to his work it has been truly said of him that "whatever he undertook to do, he did well—by which I mean better than anybody else . . . the exquisite manual workmanship of the bas-reliefs in the tabernacle of Or San Michele has been the theme of praise for two centuries. The secret of all this was that he made himself thoroughly an adept in the mechanism of the respective arts, and therefore his work has stood. Genius is too apt to think herself independent of form and matter, never was such a mistake . . . A most noble passage this and most true."

"No judgment of art is possible to any person who does not love it, and only great and good art can be truly loved ; nor that without time and the most devoted attention." (Notes on the Turner Ext. (Fine Art Society), 1878.)

"Benozzo de Lete Sandro, more commonly known as Benozzo Gozzoli was born near Florence in 1420. Like other distinguished painters of those times, he began life as a worker in metal, and his name is found among the artificers who assisted Ghiberti in making the renowned gates of the Baptistry at Florence. He shortly abandoned this branch of art and worked in fresco for several years under Fra Angelico, wherever he was employed, in the decoration of chapels chiefly at Rome and Florence, until the year 1447, when he first painted alone. His work at first was similar in character to that of his fond master,—though more advanced and realistic in character,—is generally richer in subject, and also more profuse in treatment. His composi-

tions which are generally highly elaborate and very decorative are always finely balanced and evenly distributed. In colour he is very distinctive, the keynote being frequently marked by the soft emerald green which pervades some of his works, with a charming effect, as those in Campo Santo at Pisa ; while at other times his hues are deeper in tone, and distinctly derived from the simpler mind of Angelico. He died at the advanced age of 78, and was buried in a sarcophagus in the Campo Santo, which was presented by the Pisans as a token of their gratitude to him, for the sixteen years of honourable labour which he bestowed in beautifying its walls."

Benozzo evidently delighted in the beauty of the material world ; his landscapes are more varied and circumstantial than any previous representations of their class, and his scenes are filled with charming and natural incidents.

BOTTICELLI (1446-1510).

"Many thoughts are so dependent on the language in which they are clothed, that they lose half their beauty if otherwise expressed." (Modern Painters, vol. i. p. 9.)

Alessandro Filipepi was born in Florence in the year 1440. His father Mariano Filipepi apprenticed him early in his life, first to a goldsmith and afterwards to Filippo Lippi, who died while Sandro was but 23 years of age. At that time Fra Angelico had been dead some fourteen years, while foremost in the ranks of the esteemed Masters then flourishing in Italy, were Andrea Mantegna of Padua, age 38, and in his own city Pollajuolo, then 40, Verocchio, eleven years his senior, Ghirlandio just attaining his majority, and Perugino born in the same year as himself.

Like most men of genius he appears to have been to a large extent self taught, and his poetic imagination was fed chiefly by the classic mythology of the old Greek world and the writings of Dante. "For Botticelli the grand gods of

old are immortal. The priests may have taught falsely the story of the Virgin;—did they not also lie in the name of Artemus at Ephesus?—in the name of Aphrodite at Cyprus? but shall therefore, Chastity or Love be dead, or the full moon paler over Arno? Saints of Heaven and gods of Earth, these *shall* perish because vain men speak evil of them? Let *us* speak good for ever and grave, as [on the rock for ages to come, the glory of Beauty and the triumph of Faith.” While he “understood the thoughts of Heathens and Christians equally, and could in a measure paint both Aphrodite and the Madonna, he was also the painter of Italy who thoroughly felt and understood Dante. So that he is, on the whole, the most universal of painters; and, take him all in all the greatest Florentine workman.

“Of his life it is proper to know thus much, or at least, that when he was a boy he obstinately refused to learn either to read, write, or sum, (and I heartily wish all boys would or could do the same till they were at least as old as the illiterate Alfred) whereupon his father, disturbed by these eccentric habits of his son, turned him over in despair to a gossip of his, called Botticello, who was a goldsmith, and on this, note two things: the first, that great early Italian masters of painting and sculpture, without exception, began by being goldsmiths’ apprentices. (*Ariadne Florentina*, par. 173.) The great value of that early training is elsewhere explained by Mr. Ruskin to be due chiefly to the preciousness of the material, none of which may be lost or wasted; but primarily “because it forces the boy to do small work, and mind what he is about: the second, that they all felt themselves so indebted to, and formed by the master craftsman who had mainly disciplined their fingers, whether in work on gold or marble, that they practically considered him their father, and took *his* name rather than their own; so that most of the great Italian workmen are now known, not

by their own name, but by those of their masters, (or of their native towns or villages,—these being recognised as masters also), the master being himself often entirely forgotten by the public and eclipsed by his pupil, but immortal in his pupil and named in his name. Thus, our Sandro, Alessandro, or Alexander's own name was Filipepi; but his master's was Botticello, of which master we nevertheless know only that he so formed and informed this boy, that henceforth the boy thought it right to be called Botticello's Sandro, and nobody else. Which in Italian is Sandro de Botticello; and that is abbreviated in Sandro Bottecelli. So, Francesco Francia short for Francesco di Francia, or Francia's Francis, though nobody ever heard, except thus, of his master the goldsmith, Francia. But his own name was Raibolini. So, Philip Brunelleschi is short for Brunellesco's Phillip, Brunellesco being his father's *christian* name, (the family name was Lippo) to show how much he owed to his father's careful training, and which is the prettiest instance of all, "Piero della Franacca" means Francesca's Peter, because he was chiefly trained by his mother, Francesca. All of which I beg you to take to heart, and meditate on concerning Master-ship and Pupilage. But to return to Sandro. Having learned prosperously how to manage gold, he takes a fancy to know how to manage colour, and is put by his good father under, as it chanced, the best master in Florence, or the world, at that time—the Monk Lippi, whose work is the finest out and out that ever monk did, "and whatever is most sweet and tender in Botticelli he owes to Lippi."

Lippi and his pupil were happy in each other, and he painted, for a beginning, a figure of Fortitude; and then one of Saint Jerome, and then one of Our Lady, and then one of Pallas, and then one of Venus, with the Graces and Zephyrs, and especially the Spring with flowery petticoats.

I imagine this subject proposed to a young (or even old)

British artist, for his next appeal to public sensation at the Academy ! But do you suppose that the British artist is wiser, and more civilized than Lippi's scholar, because his only idea of a patriarch is of a man with a long beard ; of a doctor, the M.D. with the brass plate over the way, and of a virgin Miss —of the — theatre ? (“ Ariadne Florentina.”)

“ It is to be presumed that by this time he has learned to read, though we hear nothing of it, (rather the contrary, for he is taunted late in life with rude scholarship) and then paints under notable circumstances the calling of Moses, and of Aaron, and of Christ, all well preserved and wonderful pieces which no person now ever thinks of looking at, though they are the best works of pictorial divinity extant in Europe. And having thus obtained great honour and reputation, and considerable sums of money, he squandered all the last away, and then returning to Florence, set himself to comment upon and illustrate Dante, engraving some plates for that purpose. And at this time Savonarola beginning to make himself heard, and founding in Florence the company of the Piagnoni (Mourners or Grumblers as opposed to the men of pleasure) Sandro made a Grumbler of himself, being then some forty years old ; and,—his new master being burned in the great square of Florence a year afterwards, (1498),—became a Grumbler to purpose, and fell sadder, wiser, and poorer day by day ; until he became a poor bedesman of Lorenzo di Medeci, and having gone some time on crutches, being unable to stand upright, and received his due share of what I hope we may call discriminate charity, died peacefully in his 58th(?) year, having lived a glorious life, and was buried at Florence in the church of All Saints, in which he had painted his St. Augustino in the year 1510. (Fors Clavigera.)

“ Thus Sandro Botticelli introduced into the realms of art in Italy, in the 15th century, much that was entirely new in hought, and which he presented in a scholarly and refined

manner. But "no art, Florentino or other can be understood without knowing the sculpture and mouldings of the national soul," and as the rise of learning and general advancement of culture during the dynasty of Lorenzo, the 'Magnificent' with which Botticelli was so closely connected was accompanied also by gross indulgences, he too unfortunately came under the ban of Savonarola for painting secular allegories, and being influenced by his vehement denunciation of all that was 'irreligious' or in any way connected with the revival of Platonic learning, he destroyed with his own hands, many of probably his choicest works.

In his treatment of mythological subjects, the classical spirit is largely preserved, and there is an entire freedom from the gross conceptions which mar such subjects when treated by later masters. In his mythical works, all Nature operates in service to the gods of the earth and the heavens; while in the case of all other painters of such themes, nature is entirely subordinated, and becomes materialised to form merely the background or landscape accompaniment to a humanitarian incident. "With the exception of Benozzo Gozzoli, no Florentine artist before him had painted such rich and magnificent backgrounds, such life-like and 'motived' action. His works, however, are of very unequal merit, and hence the great divergence of opinion as to his worth entertained, especially by modern critics. . . . And his grand and consistent backgrounds were unable to conceal the want of connection in his compositions, rich as they were in figures, nor was perfect beauty reached in their animated movements, which constantly betrayed a certain harshness, sprawling appearance, and want of repose. His gentle, dreamy, earnest, and yet lifelike and motherly Madonnas, surrounded by charming angels, still remain the most beautiful of his compositions." (Karl Woerman in *The Early Teutonic, Italian, and French Masters.*)

ROBBIA.—Luca della Robbia, (1400 to 1482,) did not discover the process of porcelain working, but made such great improvements on the mode of its manufacture that the ware came to be called by his name. The greater part of this ware ascribed to him in Italy and elsewhere, is by his successors, members of his family. Among the undoubted genuine works of Luca are the medallions of the four Evangelists on the vault of Brunelleschi's Pazzi chapel of S. Croce, the altar-piece in the chapel of the Noviziato, the reliefs over the two doors of the sacristies of the cathedral, and the two reliefs on the end wall of the last room in this museum. These beautiful works are coloured with various metallic oxides in different shades of blue, green, purple, yellow, and black." ("Florence," by Black.)

"The reliefs of Della Robbia are the best. They represent a band of youths, dancing, playing upon musical instruments and singing; the expression on each chorister's face is so true to the nature of his voice, that we can hear the shrill treble, the rich contralto, the luscious tenor, and the sonorous bass of their quartett." (Perkins' "Tuscan Sculptors.")

"These happy children, standing or sitting in careless eases with their varied instruments in their hands, these fair-faced boys and maidens blowing long trumpets, sounding their harp and lyre, and clashing their cymbals as they go, singing all the while for gladness of heart, breathe the very spirit of music. Not a detail is left out, not a touch forgotten. We see the motions of their hands, beating time as they bend over each others' shoulders to read the notes, the rhythmic measure of their feet as they circle hand in hand to the tune of their own music, the very swelling of their throats, as, with heads thrown back and parted lips, they pour forth their whole soul in song. Never was the innocent beauty, the unconscious grace of childhood, more perfectly rendered than in these lovely bands of curly-headed children thrilled

through and through with the power and the joy of their melody." (*Church Quarterly Review*, Oct. 1885.)

Ghiberti.—"The three gateways of the Baptistry have each a pair of remarkable bronze doors. The most famous are those on the eastern side by Lorenzo Ghiberti; which earned for them in the eyes of Michael Angelo the name of 'The Gates of Paradise.' The design for these doors was executed in the year 1424; but the process of casting the numerous panels, representing the Old Testament incidents, and the highly elaborate border, occupied no less than twenty-four years, and by which time Ghiberti was seventy-four years old. The northern doors, the work of Ghiberti also, were produced a quarter of a century earlier, while the glorious southern doors, made by the great Andrew Pisano, were commenced as long ago as the year 1320.

These gates last mentioned, which are thus the earliest in date, and which there is reason to believe were designed chiefly by Giotto, were originally in the place now occupied by Ghiberti's second gates, and upon their being completed in 1336, and exposed to view, after no less than twenty-two years' work in their production, "the public enthusiasm exceeded all bounds; the Signoria visited them in state, accompanied by the ambassadors of Naples and Sicily, and bestowed on the artist the honour and privilege of citizenship." (Lord Lindsay's *History of Christian Art*). The subjects included in the panels of this door relate to the life of John the Baptist, and are so marvellous in their conception as in the delicacy and perfection of their execution. Ghiberti's first gates similarly occupied a term of no less than twenty-two years, having been completed in the year 1424, when they took the place of those by Andrea Pisano, and they in their turn as already stated, gave way to Ghiberti's second doors.

The panels of these doors are delineative of the life of Christ, all of them being of the most exquisite workmanship

But notwithstanding the marvellous beauty of these latest doors, it is questionable whether they are as fine, either as bronze work, or in design, as those which preceded them, and the following remarks extracted from Yriarte's "Florence" are so just, and so entirely in accordance with Mr. Ruskin's estimate of such work, that they may well be quoted here. "Ghiberti was pre-eminently a painter and goldsmith, for in sculpture he attempted too much, and instead of being contented to use the resources of an art which, from the very matter employed for it, is limited, he abused it by trying to obtain all the variety of a picture. The result arrived at is remarkable, beyond all doubt, but the principle itself is false, for it is unreasonable to ask from a material more than it is capable of giving. Even in the gates—which are the creation of a goldsmith rather than of a sculptor—he has represented the sky and the passing clouds, and there is an anecdote told of a very competent judge of sculpture, who, passing in front of the Baptistry gate said 'There is the man who has ruined sculpture.' The judgment was a severe one, but it expresses it in an exaggerated form, a true canon of art." (Florence; its History. Translated by C. B. Pitman). This advanced realism of treatment, in those days, was an entirely new departure, and that it was due directly to Ghiberti's close study of nature we know from the interesting records which he left respecting his work. "In modelling these reliefs," he says, to quote his own words, 'I strove to imitate nature to the utmost, and by investigating her methods of work, to see how nearly I could approach her.' In this he has certainly succeeded admirably, whether the attempt to reproduce individual studies so exactly be justifiable or not, as an art canon."

(Principles of Art," by Mr. White).

GHIRLANDAGO (Domenico Bigordi) born 1449 died 1494. Florentine School.

One of the sons of a silk broker of the name of Bigordi, he

with his brothers was brought up to the goldsmith's craft, and it is supposed, acquired the appellation of Ghirlandajo from making the gold garlands then much worn by the ladies of Florence. He early showed a preference for painting, and is said to have studied under Cosimo, Roselli, and Baldovinetti, and eventually, he became one of the greatest artists of his time. His chief works are in fresco—a method of painting which he carried to great perfection—his easel pictures not being numerous. They are, however, remarkable for firmness of outline, brilliancy of colouring, and a noble boldness of composition which suggests that influence of classic art, which received its full development in the works of his great pupil Michael Angelo.

VERROCCHIO, (1435–1488). Andrea di Michele de Francesco Cione is perhaps the least known in England of all the Masters of Italy, and yet, both for the diversity of his gifts, and his power of attainment in the various departments of art, he excelled, perhaps, even Giotto.

He was born in Florence in the year 1435, and as his name above given implies, was the son of Michael and the grandson of Francis Cione. In his early boyhood he was apprenticed to a goldsmith, no more of whom is known to history than that his name was Guiliano Verocchi, or Verrocchio, in plain English 'Julian, the True Eye,' which name however, has been handed down to posterity with appropriate fitness, in connection with his famous pupil, who himself became so especially great as a 'Master' in various arts. For not only was he the authoritative head of all metal work in his day, the designer and caster of the great equestrian statue of Colleone at Venice, but a consummate master in painting also, being the actual teacher of Leonardo da Vinci, Lorenzo di Credi, and Peruginoe.

He was also highly talented as a goldsmith, as a sculptor in marble and terra-cotta work, and unsurpassed as a modeller

of life-size effigies in wax ; besides being an engraver, a professor of perspective and a musician.

Much of his work, unfortunately, has been destroyed, and of his pictures which probably were never numerous, few can be ascribed with certainty to him. Up to the time in which he lived, the custom of appending any signature to either painting or sculpture, was almost unknown, the instance of Orcagna's inscription upon the tabernacle being a rare exception to this rule.

An actual example of his painting exists in the Ruskin collection at Sheffield. It would be perhaps impossible to discover whether any goldsmith's work, which would be connected with Verocchio, is now in existence, but it is known that he executed a great many works for Pope Sixtus IV, between the years 1471 and 1484,— including twelve statuettes of the apostles, also chaseable clasps, incense burners, vases, goblets, and the like. The silver altar piece, which is still preserved in the Treasury of the Duomo, and publicly exhibited once every year in the Baptistery. Among the works in bronze by Verocchio, the best known example is the famous equestrian monument to Colleoni, in Venice. "The statue of Bartolommeo Colleoni in the square beside the church of Santi Giovannie Paolo is," says Mr. Ruskin, "certainly one of the noblest works in Italy. I have never seen anything approaching it in animation, in vigour of portraiture, or nobleness of line, . . . and I do not believe that there is a more glorious work of sculpture existing in the world." (Stones of Venice). It is further quoted by Mr. Ruskin as forming with Cellini's Perseus, and Ghiberti's Baptistery Gates at Florence, "models of bronze treatment."

This great warrior was Commander General of the armies of the Venetian Republic of the fifteenth century. So commanding a presence has he, as here expressed by the

fixity of his relentless gaze, and the steadfast determination displayed in every muscle, as he sits erect in his saddle, that such a General would strike awe in an enemy. He seems to thunder out to his followers around him, "Cry havoc! and let slip the dogs of war!" and bold indeed would he be, who would dare to encounter such opposition, or flinch under so resolute and imperious a leader. He died at Bergamo in 1475 and was buried in the chapel founded in the church of Sta Maria Maggiore, in that city, "bequeathing to the state, his arms, his horses, furniture, silver plate, and the sum of 216,000 gold florins, on the condition that a statue was raised to his memory. Verocchio being the most celebrated sculptor and founder in Italy, was applied to," in the year 1479, but on his learning after commencing the work (the horse) that the rider was to be produced by one Vellano of Padua, he broke up with indignation, his cast of the legs and head of the animal and returned to Florence. This led to a serious dispute with the Senate of Venice, who finally agreed to his continuing the work at a higher salary; he accordingly returned to Venice in 1488, but died before it was completed requesting in his will that the horse might be finished by his pupil, Lorenzo di Credi. This wish, however, was not acquiesced in by the Senate, and the work was entrusted to Alexandro Leopardi, who finished casting the work, and inscribed his name upon the girth of the colossal horse.

It is most probable, however, that not only the entire design (certainly including the lofty pedestal) but also the preparatory work of at least the horse—judging from the fine ornamentation of the trappings was the actual work of Verrocchio, and that Lesparido simply completed the production of the work in its entirety.

Another bronze statue, by which Verrocchio's name has become known is the "David" which he modelled and cast in the year 1476. This was originally placed at the head of

the staircase of the Palazzo Vecchio, at Florence, and is now in the adjoining Bargello Museum, the original painted terra-cotta model of it being in the Royal Museum at Berlin. In this statue there is a complete departure from the old Grecian style of treatment. The young hero is represented most realistically, as a veritable "stripling"—in strict accordance with the text of the story, clad in a light corslet, standing in an easy attitude, with his left hand resting upon his hip, a pose perfectly natural to a shepherd lad; the decollated head of the giant he has slain laying at his feet. Although Verocchio worked much with Donatello, (his senior by fifty years, and who may be considered one of his masters), the personality of his style is quite his own, as may be seen for instance, on comparing the David of Donatello in the same Museum, with this differently conceived work.

In the centre of the beautiful inner court-yard of the Palazzo Vecchio is a small marble fountain, adorned by an animated bronze figure of a laughing boy, playing with a dolphin, from whose mouth the water spouts. It was made originally to Lorenzo de Medici's order, to decorate a fountain at his villa at Careggi. A cast of this work and also of the "David" may be seen in the South Kensington Museum. Perhaps the most exquisite example of wrought bronze work in the world, although apparently but little known, and in ordinary travellers' guide books, generally passed unnoticed, forms part of the remarkable monumental tomb of Piero de Medeci, and Giovanni, his grandsire, the chief founder of that Ghibelline family in Florence, which created for a long time so much internicine disturbance under the opposition of the Guelphs.

This monument was erected in the old sacristy in the basilica church of San Lorenzo. The marble work as well as the bronze portion of the monument, was probably also by Verocchio, though other sculptors doubtless worked with

him. The monument was erected between the years 1469 and 1472, being produced under the commission of Lorenzo and Guiliano de Medici, whose bodies were subsequently removed to it in the year 1559. The marble archway of the tomb forms an opening in the wall of the adjoining chapel, but one side of the entire monument is ruthlessly covered over by a large picture (of most inferior quality) the back of which is exhibited through the bronze rope trellis which fills the archway. The chief decoration however, is the elaborate hammered bronze work which encase and cover the porphyry portions of the tomb.

On the top, centrally, a lovely group of acanthus foliage, from which proceed to the four corners cornucopian shells, containing all manner of fruits, and below upon the slope of the lid is a tracery of cordage. The sarcophagus itself is supported upon a lower marble table by massive lions' feet, and connected with rich scrolls of acanthus, which bind the corners; while in the centre of the side is a large wreath of fruits and nuts of different kinds inclosing the inscription; entirely of bronze of the finest workmanship.

The grand principle which characterises the whole work is especially to be observed.

Symmetrical though the design is in general, there is no meretricious repetition of any details,—such merely imitative manufacture in design having always, in all countries and in all ages, been scouted and scorned by noble workers. Thus, these cornucopias have each their own groups of fruitage, and the side of the wreath and the corner of the scrolls, are similarly varied, yet finely held in balance.

On the right hand side of the wreath, formed of fruit and foliage, commencing from the top, are grapes, fir-cones, poppy, pears, strawberry, filberts, hornbeam nuts, beans, medlars, mulberries, and oak; while on the left are again grapes, fir, and poppy, then hornbeam, peapods, blackberries,

filberts, cherries, and beech nuts, ending with mulberry and oak again. The other side is carved and decorated in the same manner, but being covered over as previously stated by a vulgar picture and hidden from view, it is impossible to ascertain the precise treatment, or even the completion of the inscription round the base, respecting which, the priests know and care nothing.

Besides his more important works, our artist sculptured many crucifixes that were highly esteemed and eagerly sought after ; and modelled many wax figures, which robed in the costume of the day, were placed in churches as "*ex votos*." These figures resembled those which the Romans were accustomed to place in the "atria" of their houses. In this branch of art Verrocchio deserves especial praise, for although dealing with perishable materials he treated them with conscientious care. He is also to be remembered for having introduced the fashion of taking casts in plaster of hands and feet and other natural objects for purposes of study, and in this he was imitated by many, who, says Vasari "also cast heads of the dead, at a small expense, in such numbers that they are to be seen over the chimney-pieces, doors, windows and cornices of every house in Florence." ("Historical handbook of Italian Sculpture," by C. C. Perkins.)

Of his paintings little is accurately known, and as already stated, but few can be attributed to him with any degree of certainty. The picture of the 'Madonna and Child' at Sheffield is doubtless from his own hand ; and for its technical qualities, as well as in its composition and feeling, it is readily distinguishable from the work of any of his pupils, the only one of whom, whose work in the least resembles that of the Master, being his affectionate and attached friend, Lorenzo di Credi, the painter of his portrait in the Uffizi Gallery. This work was secured by Mr. Ruskin from the Manfrini Gallery, at Venice, where another picture, doubt-

fully attributed to him—a female bust, apparently a portrait and thought to be a representation of Charity—still remains.” (William White, Sheffield.)

Conclusion.—I have already detained you, I fear, beyond your usual limit, and have left myself time to draw but one conclusion : that it seems obvious, if you require high class metal workers, they must have the individual training of Masters of their Art in our workshops; men, who by their works have gained the reputation of being in the high sense which Mr. Ruskin has laid down—True Masters.

I intend, however, still further to work up the subject, and present it possibly in a somewhat different form at the annual meeting of the British Dental Association to be held in Sheffield in June next. This will allow you all time to think the matter over, and when you attend our Annual Meeting, which I hope you all will do, to add each your quota of knowledge and experience to the solution of this much vexed question of early dental prosthetic training.

THE COMPANIES' BILL.—The Earl of Dudley has introduced in the House of Lords the Government proposals for the Amendment of the Companies' Act. With respect to the Departmental Committee's proposal as to the winding-up of a company under compulsion, to which we recently drew attention, it is interesting to find in clause 36 of the new Bill the following :—Where the Court is satisfied that the company was formed or that its business has been carried on with the intent or in such manner as to defraud, defeat or delay the creditors of the company, or of any other company, *or for any fraudulent or illegal purpose.*

[The following papers (advance sheets of which we have been favoured with) will appear in *The Dental Practitioner*.]

THE PHYSICAL CHARACTERISTICS OF THE TEETH.

By THOS. FLETCHER, F.C.S., Warrington, England.

In the *Practitioner* for January, is an article on some experiments of Dr. G. V. Black, detailing results which are neither curious nor unexpected, where they happen to be correctly stated. As an example of the want of ordinary care, may be taken the analysis on page 41, when the "mercury" squeezed out of an amalgam is given to the second decimal in ignorance of the elementary fact that "mercury" is not and cannot be squeezed out of any amalgam under *any* conditions. It would be as easy to squeeze water out of sugar after they are mixed. The mass is simply divided into two amalgams, one containing enough mercury to keep it more or less fluid, and the other with a larger percentage of the solid metals. It will not yet be forgotten that I devoted the whole of my time for several years continuously to a series of exact experiments with filling materials and alloys used for the purpose. My experiments were numbered by thousands, and I had plugs under continuous observation for periods extending over many years.

During the whole of this time, I never succeeded in making a single plug, of any ordinary alloy, which could be considered satisfactory, if any excess of mercury had been added, the squeezing out of so-called "mercury" made the results so erratic that the system was entirely discarded at a very early stage. It is also stated on page 43 that "a block of amalgam made with sharp angles will preserve that form for an indefinite period, if it be put away in a box." This most certainly is *not* the case with the majority of amalgams in use at the present time, especially if they are made by the squeezing process. An approach to the shape is retained, but a flat surface made and polished as a flat mirror does *not* retain its flatness. Experiments made in ivory or in teeth are worthless as regards permanent results. All my trials, for continued observation, were made in glass cavities of from three-eighths to one-half inch diameter.

So far as my experiments go, the system of mixing with excess of mercury and squeezing out, either with leather or during packing, is a great mistake, and the results are never to be depended on. An amalgam made from an alloy requires totally different treatment; the mercury used must be no more than is sufficient to make the *surface* of the grains cohesive; it must be built like cohesive gold. Any excess of mercury working up, carries with it part of the alloy, rendering the plug irregular in texture and composition, and therefore unreliable. The removal of this excess may *perhaps* improve matters, but the irregularity of the result can never be prevented.

An amalgam, properly worked, like cohesive gold, and which will weld, but will not flow, is not liable to the changes which occur when other methods are used, and its value in the mouth can only be tested theoretically by packing in glass cavities of rather large diameter, at

least equal in size to the largest plugs ever made in the mouth. That the squeezing out process will make, in most cases, plugs which last several years in the mouth, is an undoubted fact, but this is not what a good operator would expect with a properly inserted amalgam of uniform texture and composition throughout, and it is an undoubted fact that amalgams, treated in the manner they ought to be, will pack and make reliable sound plugs entirely under water; they will drive the water out, and weld up sound and solid, retaining their shape permanently. That it is easier to daub a paste into a hole rather than to build cohesive solid grains, is a fact which cannot be questioned, but this is I think, not the point at issue. Hard grains, shaken in a glass tube with sufficient mercury to amalgamate their surfaces, can be packed and malleted like cohesive gold; and unlike cohesive gold, this can be done wet or dry. The user of an amalgam should be a builder, not a plasterer.

AMALGAM AND AMALGAM FILLINGS.

By G. V. BLACK, M.D. D.D.S., SC.D.

Through the kindness of the editor of the *PRACTITIONER AND ADVERTISER*, the proof sheet of an article by Thomas Fletcher, F.C.S., Warrington, England, is before me, entitled—"The Physical Characteristics of the Teeth."

In this paper objections are urged to the results which I have obtained in the study of the Silver-Tin Dental Alloys, based on the fact that I squeezed out the surplus mercury, and in that way changed the qualities of the alloy. That is to say; in removing surplus mercury some of the constituents of the alloy will be dissolved in the mercury removed, and possibly the formula will be in some degree changed, because of one constituent being dissolved in greater proportion than another.

I recognize this as quite possible theoretically. It is certainly true that some of the alloy is dissolved in the mercury, but it is also true that the amount is very small in hand mixes, and but very little greater when the mix is ground in a mortar. While in my tables I treated mercury removed as pure mercury, I recognised that it contained some proportion of the constituents of the alloy. But this proportion was regarded as too insignificant to produce a perceptible change in the results given by the formula. No one has yet given careful analysis of the mercury squeezed out of alloys in ordinary mixing, so that we do not know how much metal is carried with it, or in what proportion of the constituents, tin and silver. Some chemist should do this, giving formulæ, proportion of mercury in the mix, how mixed, time of mixing, per cent. of mercury wrung out (with contained metals of alloys) and the per cent. of each metal carried out with the mercury. Information on this point might be useful.

But now to the main point. The author of the paper prefers mixing the least possible mercury with the cut alloy, because he finds results more regular. In all of my trials of this plan two points have been prominent in the results.

First. When the stability of the resultant amalgam was tried under steady, or remittent, pressure, the flow was markedly greater than when mixed with a surplus of mercury, and wrung out dry and then packed

Second. When mixed with the least possible mercury the same alloy

the condition as to oxidation being the same, (*i. e.*, taken from the same package) the shrinkage was greater than when mixed with a surplus of mercury and the excess squeezed out. In both of these cases the dryness, when the packing is done, is understood to be about the same. I wish it distinctly to be understood that in my experimental work amalgams were wrung out *dry*, and that fillings were not *plastered into holes*, except when the fact was noted under the title *soft fillings*.

Again, quoting the passage, "a block of amalgam made with sharp angles will preserve that form for an indefinite period, if put away in a box." Mr. Fletcher says: "This most certainly is not the case with the majority of amalgams in use at the present time, especially if made with the squeezing out process. An approach to the shape is retained, but a flat surface made and polished as a flat mirror does not retain its flatness." This is about right. I was speaking of spheroiding, and of the belief that amalgam fillings *rounded away from margins*, and stated that the rounding of corners did not occur; that they remained as sharp as when the filling was made. But if the filling as a whole shrinks or expands, certainly a perfectly flat surface like that of a mirror will be warped, yet the corners will remain sharp. This leads me again to emphasize the fact that when amalgam is squeezed out with pliers, the central part is heavily pressed, while the margins are not, and fillings from a mass thus treated always warp. That is, if the amalgam shrinks, the shrinkage is irregular. The mass should be wrapped in muslin, and wrung out with all the force that can be exerted with the hands. *Then if the alloy is in good condition no mercury can be removed from it with the ordinary force used in packing.* But if the cut alloy has become oxidised, no force that can be exerted in wringing will make it so dry that mercury will not come to the surface in packing.

As to glass tubes for experimental fillings, I will say that I made a considerable trial of them, and have arrived at the opinion that they are not suited to exact studies of amalgams. If the ink, or aniline dye test, is to be used to detect shrinkage, it is by no means sufficiently delicate. If the microscope is to be used, steel is better than glass because a slighter break of margin can be seen, and for micrometer tests glass tubes are not at all suitable. At this date we must have closer observation of all of these matters that can be made with the naked eye examination. The day for thousands of meaningless tests has passed. What we need and must have are tests made with the best of instruments, every possible condition that can be thought to influence results being noted. There are doubtless conditions not yet thought of or suggested that influence amalgams, and it is only by noting all we can think of as having a possible influence, and performing our work with exactness, making records of every step as it is taken, that we are likely to find these hidden influences. We may rest assured that when we *know* the influences causing irregularity of results, and can control them, we can attain regularity.

Touching the question of squeezing out mercury from the amalgam with instruments while making the filling, I can say with Mr. Fletcher that I have not yet on my records a single filling that has retained its margins without decisive breaks, where that was done. To get the best results with amalgam, it seemed to be necessary that the mass be in such condition that it can be firmly packed without bringing softened material to the surface. I have tried every means yet suggested for the removal of this softened material, with indifferent success. True, the more perfectly it is removed the better the filling, but the best filling is made when there is no soft material to be removed.

As to making fillings wet, I hardly know how to speak strongly enough in its condemnation. It is true any tyro can put amalgam into a wet

cavity, and it is also true that the amalgam will hold together and will become hard, and it may stay in the cavity for some time. But such a filling will leak all the same, no matter what amalgam is used, no matter how it is manipulated. *The walls of the cavity cannot be perfectly dried by pressing in the filling.* Therefore it will be leaky, as all sub-marine fillings are, and always have been. It is abominable that men of this day and generation will persist in doing such slop work, and call it Dentistry.

AMALGAM AND AMALGAM FILLINGS.

A FURTHER CRITICISM.

By THOMAS FLETCHER, F.C.S..

On page 74 of the last issue, is a printer's error, dividing a sentence, which entirely alters its meaning. What I intended to say was, that I had never succeeded in making a really satisfactory plug with any amalgam made with an alloy with which an excess of mercury had been mixed; I have made thousands of satisfactory ones by other methods.

The one important question which experiments with amalgams are intended to settle, has apparently been lost sight of. Given materials which have to be used under specific conditions, the question is, which of these materials under the same condition in the same cavities, and in the hands of the same operator, will give the most perfect results. Every operator should test his own skill in this manner with different materials, in cavities of equal size, where wedging is difficult or impossible. I have not forgotten a "round robin" in the form of a block of ivory drilled with a number of holes, one of these holes being filled with gold by each of a number of celebrated operators connected with a well-known University, the block being afterwards immersed in coloured water, and then split open. *I saw the result, and silence is golden.*

It is not necessary for any filling to be watertight. Microbes have a form and size, visible under the highest power of a microscope; the particles of colour in a perfect solution in water, are so small as to be totally invisible under any microscope known, and if a filling will exclude coloured water or ink, any fluid which can penetrate is of necessity sterilised, and inert. The body of the tooth contains water, and if the cavity is not dried and made absolutely watertight against the substance of the tooth itself, the exclusion of sterilised water is unnecessary. One question remains; whether in drying and varnishing, the surface of the cavity is not killed, and whether the death of this surface is not an objection rather than otherwise. Dead or alive, all experiments go to prove that so long as any fluids which have access are sterilised, no change is possible. It is not necessary to bandy words about micrometers, microscopes, steel tubes, and other elaborations, they are elaborations which make us forget the real question at issue.

Dr. Black and myself appear to be very much at cross purposes, and I can only suppose that this is caused by the difference in the apparent meaning of many words in this country as compared with the American meaning, and for this reason I do not appear to have made myself clear.

In the first place I have never found any alloys of silver and tin alone worth the trouble of experimenting with, they appear to have defects which, in one way or another, bar them from use in any exact work.

When Dr. Black treated the fluid amalgam removed, as "pure mercury," and regarded the proportions of alloy removed, as "too insignificant to produce a perceptible change," it would have been better to have borne in mind that what one thinks is of very much less importance than what one knows, as a matter of fact the metals removed are in many cases sufficient to enable the "pure mercury" to become more or less solid.

My own experiments in this direction are not recorded, but it is a very simple matter to get at the quantity of alloy removed, by taking a known weight of the so-called "mercury," and heating it to redness under charcoal in a crucible. This, although not exact, will be near enough to show that the matter is not so insignificant as Dr. Black imagines.

The shrinkage of alloys and silver and tin is not of any importance; as I said before, alloys of these two metals alone are not desirable for amalgams; shrinkage is not a necessary property of amalgams. The "dryness" of amalgams mixed with excess of mercury and squeezed, and that of amalgam properly mixed without excess, cannot possibly be "about the same," the process of separation given above will show that the quantity of mercury remaining, is about double in the squeezed amalgam, the latter, hard or soft, is a "paste" which flows in all directions under pressure.

Dr. Black's remarks about a "spheroiding" appear to show that this expression has two totally different meanings. The spheroid tendency is understood, in this country, to mean that a mass, *as a whole*, has a tendency to lose any given shape in an attempt to become globular in form, not that sharp edges or surface marks will disappear from a comparatively hard mass, but that this surface, if flat, shall become convex, and projecting angles have a tendency to draw closer together, producing an appearance which is wrongly called shrinkage.

Dr. Black states that "if a filling as a whole shrinks or expands, certainly a perfectly flat surface, like that of a mirror, will be warped." This, according to the known laws of nature, is not correct, and if it is a fact proved by direct experiment, I should very much like to know the precise composition of the alloy used. So far as I am aware, no amalgam exists which will either contract or expand and which is also absolutely free from the spheroidal tendency. Dr. Black's statement is so clear and positive that I should like to be put in a position to repeat his experiment under proper condition, as there must be some reason for the result other than the one given. The surface of aspheroiding mass does not "warp," i.e., it does not twist and become irregular, a flat surface becomes *convex*, a result very different to that commonly understood by the expression to "warp."

"As to making fillings wet," "the walls of the cavity cannot be perfectly dried by the filling," to quote Dr. Black's words, it must be remembered that the walls of the cavity, in their normal state, like all living tissue, contain water, and life depends on the presence of this water; particles of amalgam cannot weld if a film of water exists between them, and if a plug is packed in solid, and welded solid throughout, it is not easy to see where the water can be, if the space between the plug and the cavity remains colour tight. Without advocating the use of wet packing, I simply state a fact which is worth noting.

Dr. Black makes a special and strong point of "doing our work with exactness," and there I go with him fully, but until the use of an alloy of tin and silver alone, is discontinued, and until experimenters take

the trouble to learn the result produced by the squeezing process, any approach to "exactness" is impossible.

There is one curious and most important factor in the results, which has been overlooked or ignored by most, if not all experimenters, and this is the extraordinary speed of hardening caused by the use of a small percentage of platinum, in amalgam alloys containing silver. If the amalgam is worked after this primary hardening has properly commenced the result is not satisfactory, and the plug shows defects which would not have existed if no time had been lost in the packing. This property of platinum causes both good and bad results, depending entirely on the knowledge and expertness of the operator, and any experiments which do not take it into account are unreliable.

In criticising Dr. Black's results, I have only been able to refer to the article published, in *The Practitioner*, and the full details might possibly affect the criticism. With regard to the tin and silver alloy, I have taken it for granted that this alloy without additions, was used for the experiment, as the two metals are so specifically referred to, and if this is the case, it is to be regretted that time has been spent on so ancient and worthless a material.

HISTRIONIC SPASM.— The *Medical Press* publishes a note on a case shown by Dr. Arthur Hill at a meeting of the Sheffield Medico-Chirurgical Society. The patient was an elderly man with histrionic spasm affecting almost all the muscles of the face and jaws. The disease had been coming on insidiously for many years, but had been much worse lately. Violent twitching of the eyes and facial muscles; spasmodic contraction of the various muscles of mastication, either in the vertical or side to side motions, accompanied by profuse salivary discharge, were the most noticeable features of the affection. The patient noticed that when the movements first became violent all his lower teeth on the right side, and all his upper on the left side, became loose, and fell out. When at its worst he could only get to sleep by putting a small prop between his jaws, which fell out when he went to sleep. He can restrain the movements for a short time, but after doing so they become much more violent. The disease seems to be of the nature of a neurosis, and has been much benefitted by a course of quinine and iron.

British Journal of Dental Science.

LONDON, APRIL 15, 1896.

CHLOROFORM CORRESPONDENCE.

Last month we recorded two deaths under chloroform which had been administered for the extraction of teeth, and one of these cases has afforded the basis of correspondence in *The Lancet*. In an annotation in that Journal the writer expressed his opinion that "It is a matter of no small regret that dental practitioners should not be better informed upon these matters than to permit the employment of chloroform upon their premises as an anæsthetic."

Now it is evident that some one else besides the dentist requires information in the matter, for we imagine that in nearly every case where that drug is administered, a qualified medical man is called in as anæsthetist. Agreeing, as we emphatically do, with the *Lancet's* condemnation of Chloroform in a dentist's rooms, we also recognise that a discussion of the points raised may properly find place in the columns of a medical journal. We cannot but think that the very large majority of dentists are quite satisfied with the results obtained by Nitrous Oxide, and the absence of letters on the subject in the dental journals would seem to indicate that there is nothing further to be said. On the part of the minority, however, Mr. WARDILL, a dentist, wrote to the *Lancet* combatting the remark we have quoted, and denying that Nitrous Oxide fulfils all the requirements of the dentist. He agrees that "gas" and Ether are preferable to Chloroform, and that the horizontal position should be assumed, but thinks that an anæsthetist is perfectly justified in administering the more dangerous agent or whichever anæsthetic he deems advisable in a dentist's office in the event of severe operations.

Mr. HENRY SEWILL, another dentist, who has previously expressed his views on the question, considers that practically the use of anything than Nitrous Oxide in ordinary

dental surgery is unjustifiable and that it is highly culpable to give chloroform in dental cases without clearly explaining to the patient, or his friends, the risk incurred. He declares that henceforth, after the warnings which have been lately published, administration of chloroform for tooth extraction in a dentist's chair without every preliminary and precaution usually taken in serious operations, will when death ensues deserve a verdict of "Manslaughter" against the operator. Mr. SEWILL's opinion although strongly expressed is the one which we think will be ultimately unanimously accepted. The risk is admitted and it is only right that the patient should be warned. Dr. SILK, anæsthetist to King's College and Guy's Hospitals tells the same tale and points out that the teachers are absolutely unanimous in condemning the administration of chloroform in the dental chair; in fact, some go so far as to teach that it is not justifiable under any circumstances. "If the matter were put to the patient in this way it would be seldom, I think, that he would hesitate to adopt the more cautious plan of two or three sittings, or that he would grudge the slight extra expense which might be involved."

KINGSBURY V. HART.—Dr. Kingsbury, of Blackpool, who recently obtained £150 in a libel action against the *British Medical Journal* has explained the affair to the members of the Fylde Medical Society, of which he is the Hon. Secretary. Resolutions in his favour, and in condemnation of the attack upon him by "Ethics" were passed unanimously, and then Dr. KINGSBURY read a letter which was addressed by him to the *Journal* since the action, but which was not published. In this he pointed out that for twelve years he had allowed certain Hydropathic establishments to put up his plate with hours of attendance, and to announce his name in prospectuses and advertisements, without hearing the faintest whisper of dissent from any of the local medical men. Having vindicated his professional conduct he has now requested the proprietors of the institutions he is connected with to remove his name at their earliest convenience from their premises and publications.

REPLANTATION OF TEMPORARY TEETH.—In *Pediatrics* is the account of a case of so-called *transplantation* of the two upper central incisors in a child of two years and nine months. The little girl fell down the cellar stairs and the teeth were displaced “as completely as if by forceps.” After the patient had gone to sleep in her mother’s lap, chloroform was administered without the child awakening, and the teeth were replaced within their sockets and pressed into position. The gums were cleansed antiseptically, but no other dressing was applied, and they were said to heal by first intention. Four weeks afterwards, the teeth were firm, in good position, and of normal colour. The teeth were out of the mouth more than an hour and were kept in a normal saline solution of tepid temperature.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary monthly meeting, February 3, 1896. Mr. David Hepburn, L.D.S. Eng., President, in the chair.

The Minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed as non-resident members of the Society :—George Henry Bowden, L.D.S. Eng. & Glasg., Roseneath, Reigate, Surrey ; T. Rubery Chambers, L.D.S. Eng., New-Inn-Hall Street, Oxford.

The following gentlemen were elected resident members of the Society :—Frederick Lawson Dodd, M.R.C.S. Eng., L.R.C.P. Lond., L.D.S. Edg., 41, Wimpole Street, W. ; Walter S. Nowell, M.A. (Cantab), L.D.S. Eng., 41, Wimpole Street, W.

The following gentlemen were elected non-resident members of the Society :—Ernest Catt, L.D.S.I., D.D.S. Mich., 11, Valley Bridge, Scarborough ; W. Fergus Cornelius, L.D.S. Eng., 29, Orchard Gardens, Teignmouth ; Edmund Lewis Dudley, L.D.S. Eng., 14, The Circus, Bath.

The LIBRARIAN announced the receipt of the usual journals and periodicals, and *The Transactions of the Med-*

ical Society, 1895, *The Calendar of the Pharmaceutical Society*, 1896; "Een Historische Schets der Tandheekunde," John E. Grevers; two pamphlets, "Handelingen van net Nederlandsch Tandheekundig Genootschap."

The PRESIDENT said he regretted to have to record the death of a member of the Society, Mr. George Gregson of Harley Street, who died about ten days ago. Mr. Gregson had been a member of the Society since 1857, and many years ago he filled the offices of honorary secretary and treasurer of the Society, member of the Council, and in 1884 he was elected a vice-president. He was well known, and his death would be a great sorrow to them all.

The CURATOR said: I have, sir, first of all to acknowledge the receipt of a skull of a crab-eating racoon, from Mr. Morton Smale, to whom we are already so deeply indebted for numerous specimens of comparative dental pathology. This is an interesting specimen, showing a supernumerary premolar in the upper jaw on the right side. Supernumerary teeth in the lower animals are not very common, but we have, as you will remember, at any rate one specimen in the Museum, that of the mandible of a gorilla, with two supernumerary teeth horizontally placed in the ascending ramus.

The Council has consented to the purchase of two specimens, one the skull of an old dog, showing a great deal of absorption of the alveolus with deposits of tartar, such as one commonly gets in pyorrhœa alveolaris. The other specimen is much more interesting being the skull of a young baboon, just at the period when the first and second dentition are changing, and showing—as the result of rickets—very great thickening of the jaws and the other bones of the skull which are developed in membrane. It is a very rickety skull indeed, and the teeth are erupting in consequence rather late and very irregularly. We had already, and have had for a good many years, a somewhat similar specimen in the museum, of a baboon with rickets, and I have placed the two on the table for comparison side by side.

CASUAL COMMUNICATIONS.

Mr. UNDERWOOD described an artificial nose which he had constructed, and said he must apologize rather about this particular nose. First of all it was not so good as it might be, and he thought he saw his way to improving the method of painting it. Also it was not very easily removed. It

was at present fastened on to the patient's face with spirit gum. She was in attendance, but before asking her to enter the room he would just briefly describe the way in which he arrived at that mode of attaching it. First of all he attempted, some few months ago, to make an artificial nose, and he did so with some sort of success, attaching it by means of spectacles. After that he made a rather more perfect one, a model being taken of the face in plaster and the nose modelled in wax and vulcanized, and then hollowed out considerably. Before vulcanising, small points of gold were inserted on either side of the bridge. These were tapped; a screw was introduced and fastened on to the bar of the spectacles, and so the whole apparatus was held in place. First of all he tried a very flexible band round the back of the ear, but finally had to resort to a rather harder one. This was all very well, but of course when the spectacles came off the nose came off too. There was also a little difficulty about the line of attachment. It necessarily showed most at the side where the spectacle band ended. He attempted to get over that by gumming wool, tinted as nearly as possible to nature, underneath the vulcanized attachment, and that did destroy the shadow to a great extent, for it was the shadow chiefly that showed at the edge. It appeared to him, however, that if there was any of the original structure remaining it would be much better to do away, if possible, with the spectacles, and he attempted to do so in that case by fixing the nose with spirit gum. This, of course, was not very permanent. It would be taken off with cold cream or spirit at night, and put on in the morning. That also, no doubt, did a certain amount of injury to the painting. It was not so permanent as he could wish, and he hoped later on to arrive at some kind of enamelling which would bear all the washing and changing without destroying the colour.

The patient was present but as she was naturally somewhat nervous, and the fastening and taking off the nose was a little tiresome, he was sure members would forgive her for simply appearing with the nose on. It had been put on that afternoon in the presence of the President, so that he would be able to corroborate the statement that the method of fixing was fairly simple.

The patient having entered the theatre, Mr. Underwood said the spirit gum lasted fairly well throughout the day,

and would stand the ordinary changes of moisture and heat. At present the paint used was oil paint, and when it was dry he destroyed the glaze by means of a powder. The glaze, of course, would make it look extremely artificial, but that was got rid of by means of a powder prepared by Mr. Martindale, which really produced a fairly good result, but was at present not very durable. One great advantage of this new arrangement was that they could do without the spectacles, for having to remove the nose with the spectacles was a little bit of a drawback. At the distance from which the patient was seen by most of the members the result appeared very good, especially with the veil down.

The patient having left the room, Mr. Underwood exhibited models of this and other cases. He said the case just seen was a case of lupus which had been cured.

Mr. R. H. WOODHOUSE exhibited the model of a case of fracture in the bicuspid region as a result of a blow on the chin. The patient was a boy, age 14 years, who was violently struck on the chin by the head of another boy. From the force of the blow the bicuspid on the right side of the mouth were fractured, the inner cusps being knocked off, but on the left hand side the second bicuspid was completely fractured through the pulp chamber. The boy suffered a great deal of inconvenience from it for a few days, and then he had to have it taken out. When seeing the patient about a week after the accident, although he had had such a severe blow, there was nothing on the face to indicate it, and possibly he had to thank the fracture of his bicuspid for saving him from fracture of the condyles of the jaw.

Mr. C. F. RILLOT reported a case of football accident as follows:—A patient came to me this afternoon with the history that he had been playing football on Saturday, and had been kicked in the mouth. His mouth was rather swollen, but there was no injury to the soft tissues. I examined his teeth, and found the two upper central incisors apparently very loose, considerably elongated in their sockets, and leaning somewhat inwards. On probing, I found the right one was fractured high up; the left one felt as though fractured, though I could not actually be sure of the fracture by probing. The teeth were extracted, the coronal portion coming away quite distinct from the apical portion in each case. On examining the fragments there is distinct evidence of absorption, the apical portion of the pulp in each case being expanded into a large, fleshy mass, presumably of absorbent functions.

The patient now volunteered the remark that he had had an exactly similar accident two years before. The teeth had been painful for a time, but that passed off, and beyond a slight elongation, they had been quite right until last Saturday. It is quite evident, on looking at the specimens, that the fractures must have taken place at the time of the first blow, two years ago, and the interest of the case lies in the fact that these teeth should have been perfectly comfortable for two years under these conditions.

Mr. Charles S. Tomes, M.A., F.R.S., then read a paper on "Notes upon Dentine and Enamel," which is published on page 337. A report of the discussion is held over to our next issue.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of the members of this Society was held at the Grand Hotel, Aytoun Street, on Tuesday, the 7th January, 1896. Mr. Simms, President, in the chair.

ELECTION OF MEMBERS.

The following were elected members of the Society:—
G. Brunton, Leeds; F. Pritchard, L.D.S. Eng., Blackburn.

CASUAL COMMUNICATIONS.

The PRESIDENT described a method of constructing closely fitting gold bands to molar, bicuspid, or other teeth. Pure gold plate of No. 3 thickness is used, and burnished to fit the tooth on the plaster model. The band being removed to the soldering block, 16 carat gold is melted on to this by means of the blow-pipe, until the necessary thickness and strength are secured. The result was a band fitting with accuracy even on irregular teeth. Mr. Simms shewed several specimens.

Mr. WOLFENDEN exhibited several crowns with platinum pins and collars and contoured to shape on the palatal side with Downie's tooth body.

Mr. HARRISON (Sheffield) then read his paper on "Art Metal Workers," illustrated by a series of beautiful lantern slides shown on the screen by Mr. Ed. Houghton.

At the conclusion of the paper Mr. G. G. CAMPION said he was sorry to say he knew little of Italian art metal workers, so that he was unable to criticise Mr. Harrison's

admirable paper. It seemed to him to be a great gain to them as a Society to be taken away so absolutely out of their ordinary methods of thought and their ordinary conceptions of metal work. He was personally very much indebted to Mr. Harrison for having led them so far afield and shown them so many excellent examples of Italian metal work. When he first heard of the subject of the paper he thought he was going to show them something of the kind of work which was going on at Sheffield, and of the individuality which was being cultivated and maintained by the metal workers in that place. But Mr. Harrison had done better than that; he had taken them into a sphere of art where individuality had been cultivated much more widely than even it was at Sheffield, and for that he was entitled to the hearty thanks of that Society.

The PRESIDENT said Mr. Harrison had dealt with his subject in so admirable a way that few of them were able to follow him. They needed time to reflect upon the points he had put before them, and perhaps to have the advantage of reading the paper over again, before they could venture upon criticism—even if it should be possible. He believed every one present was willing to receive instruction in a subject of such great interest—a subject which was not in any way without their province, dealing as it did with the working of metals, and the method of education therein by the old Masters. He had much pleasure in conveying to Mr. Harrison the thanks of the Society for his excellent paper, and to Mr. Houghton for his management of the optical lantern.

Mr. HARRISON, in reply, said the whole object of his paper had been to try and get at some sort of a conclusion with regard to the correct way (if they could) of teaching properly the art of metal working, in which they as dentists were so especially interested. They acknowledged their present system was a failure, and that fact had led him to write his paper, if for nothing else but to give them some data to go upon.

Dental News.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The twelfth annual dinner of the Edinburgh Dental Students' Society was held in the Windsor Hotel, Princes Street, on Thursday evening, March 5th, when Mr. W. Ivison Mac-

adam, F.R.S.E., the honorary president elect, occupied the chair, and Mr. R. Lindsay, L.D.S., and Mr. Malcolm, L.D.S., acted as croupiers. Dinner was served to over seventy, and amongst the guests present were the interim Dean, the Dean of the Glasgow Dental School, Dr. William Craig, Dr. Miles, Dr. Guy, the President and Secretary of the Glasgow Dental Students' Society, and many past students now in practice at a distance.

After the loyal toasts, the Chairman proposed the toast of the evening, "The Edinburgh Dental Students' Society," and in doing so, emphasised the fact that apart from its more serious objects, the Society did excellent work in promoting good fellowship among its members. This session there had been held a dance, a smoking concert, paper chases, swimming contests, and he considered this present prosperity attributable in no small degree to the untiring zeal of the office bearers.

Mr. Lindsay, the president, replied, in a most happy and humorous speech.

Other toasts were "The Incorporated Edinburgh Dental Hospital and School," proposed by Dr. William Craig, and replied to by Mr. Andrew Wilson, L.D.S. and Dr. Guy; "Edinburgh School of Medicine," by Mr. T. Dilks Page, L.D.S., reply by Dr. F. M. Caird; "The Guests," proposed by Mr. H. P. Friend, reply by Mr. Biggs, L.D.S.; "Past Students," by the Secretary, Mr. T. R. D. Walkinshaw, responded to by Messrs. David Monroe and Sewill Simmons, and "The Chairman," by Mr. J. Morris Stewart.

The toasts were pleasantly interspersed with song, story, and recitation, and instrumental solos, a special debt being due to Mr. Markham, one of the students, for his original verses in his well sung songs; and to Mr. T. Dilks Page for his clever conjuring entertainment.

Of the others, Messrs. Bell, Carr, Morris Stewart, Routledge, Hector Chalmers, Imrie, Mitchell, Harkness and Bosanquet did much to entertain, and their individual efforts were heartily appreciated. Needless to say, the night was quite old when the Committee was toasted, and the chairman brought to a close one of the most successful gatherings ever held by the students.

The menu as usual was an artistic production in black and white, of goodly proportions, humorously portraying everyday phrases in dentistry.

PROSECUTIONS AT CARDIFF.

At Cardiff First Police Court (before the stipendiary magistrate, Mr. T. W. Lewis) a case was heard in which Mr. H. N. Shellard, of 4, High-street, Cardiff, was prosecuted under the Dentists' Act of 1878, for "unlawfully taking and using a description, namely, 'Dentist, Cardiff and South Wales Dentist Company,'" implying that he was registered under the Act of 1878, and was especially qualified to practise dentistry, when he was not so registered.

A similar summons was issued against Mr. T. Osborne White, of 5, Charles-street, for taking and using a description, namely, "Dentist, Dental Institute," when not being registered under the above mentioned Act.

In opening the case Mr. Turner explained that the present was the first prosecution of the sort that had been made in Cardiff. The official register of dentists was then put in. Defendant's name was declared not to be found therein.

The first witness called was William Oxley, of 83, Alexandra-road, Canton, who stated he had been for nineteen years a detective in the Cardiff police force. On February 24 last, in company with his wife, he visited defendant's premises. Upon seeing Mr. Shellard Mrs. Oxley asked "Are you Mr. Shellard, the dentist?" to which question that gentleman replied in the affirmative. Mrs. Oxley had then told defendant that she had come to have an impression taken of her mouth, with a view to being provided with a set of false teeth. This having been done, Mrs. Oxley paid 5s. on account, and witness and she left the premises.

Cross-examined by Mr. Belcher, witness admitted that he had been asked to visit Mr. Shellard by Mr. Quinlon, who had suggested that witness should take his wife with him. He further admitted that his wife was not anxious to get false teeth, but he had gone because he was instructed to do so. Before entering the dentist's den he had told his wife to ask specially to see Mr. Shellard, the dentist, and to give her maiden name, Hockman, which she did.

Mr. Belcher: That was untrue?—It was, sir. Mr. Belcher: It was a lie?—A professional lie. (Laughter.)—Mr. Belcher: I'm much obliged to you for that expression. That, I think, is a term you have learned since you left the Cardiff Police Force, eh?—I have had a good many names in my time. Witness also stated that his wife had told defendant she would call again. Mr. Belcher: And that was another lie.

Mr. Belcher then cross-examined witness at some length about his professional payment. Oxley admitted that the 5s. his wife had paid defendant on account had been refunded to him. He (witness) expected a guinea a day remuneration for his work.—How long have you been at it?—Three days.—And what about your evidence to-day?—Oh, I shall expect a little extra for that. (Laughter.)—Mr. Belcher: I should think you would.

Mrs. Oxley, under cross examination, swore that she went to the dentist to procure a set of teeth, which she really wanted.—Mr. Belcher: I put it to you that you went there with lies in your mouth to get evidence for this case?

The Stipendiary, in passing sentence of a fine of 40s. and costs against defendant, disallowed the costs of the two witnesses.

The other case, in which Mr. T. Osborne White was similarly summoned, was then proceeded with.—Mr. Alfred Jackson represented defendant.—A servant girl in the employ of Mrs. Oxley played the part of the detective in this case, and a similar penalty to that in the preceding case was ultimately imposed.

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BUCCAL SYPHILIS.*

By R. B. WILD, M.D., M.Sc.,

Physician to the Skin Hospital, and Hon. Medical Superintendent of the Cancer Hospital.

Dr. Wild gave a short address dealing with "Buccal Syphilis." After apologising for the somewhat discursive nature of his remarks, owing to not having had the time to commit his thoughts to paper, he said :—

The choice of the subject arose out of a conversation I had with your secretary some time ago, in which we were discussing syphilis so far as it affected the mouth, and its bearing upon dental practice. Your secretary suggested to me that it would be of interest to some members of the dental profession if one presented to them a review of the different forms in which syphilis might show itself in the mouth, and the prominent symptoms by which the dentist might recognise that he had a syphilitic patient to deal with.

The necessity for this is apparent from two points of view; first of all the welfare of the dentist himself, because many of you are aware that syphilis is not unfrequently contracted by the secretions of a syphilitic patient getting into a little scratch or abrasion on the hand or fingers of an operator; secondly the welfare of the patients, since syphilis has been transferred from patient to patient by means of instruments

* Read at the Manchester Odontological Society.

used inside the mouth. For example, syphilis has been conveyed from one patient to another by means of a stick of caustic ; a Eustachian Catheter some years ago was shown to be the cause of thirteen cases of syphilis in the practice of a Parisian throat specialist ; there are also, I believe, several cases in which dental instruments have been the source of infection. I believe, therefore, that it will be of interest to you to briefly review those appearances in the mouth which should, when recognised, make you particularly careful to thoroughly disinfect all instruments used in that case before using them to another patient, and also to take precautions to ensure your own safety.

With regard to the disease itself, we are all inclined to regard syphilis too exclusively as a venereal disease. In the majority of cases it undoubtedly is so, but about ten per cent. of all cases are contracted in a non-venereal manner. The primary lesion in these cases may occur on any part of the body, the important fact for our purpose to-night is that one half of them (*i.e.* about 5 per cent. of all cases) occur in the mouth.

The parts of the mouth affected are the lips, tongue, tonsils, and soft palate, the two former more frequently than the latter.

Syphilis in the mouth takes on all the three forms which it presents on other parts of the body, viz., the so-called "primary," "secondary," and "tertiary" lesions. The primary form is the rarest, and the secondary the commonest. It is very rare indeed for any syphilitic patient not to present at some period of his disease secondary lesions in the mouth, no matter what part of the body was the seat of the primary infection. The tertiary lesions are intermediate in frequency.

Most of you know that syphilis is a disease which runs a very definite course ; in the first period, or period of the

primary sore, syphilis is a disease such as a carbuncle or any other disease of the skin or mucous membrane in which local infection has caused symptoms of local reaction on the part of the tissues. Sooner or later the local infective agent increases, and multiplies, and passes into the blood, so that in this, the secondary stage, the disease is a constitutional one, similar to small pox or scarlet fever, and during this stage the blood and tissues of the patient are contagious, and capable of conveying the disease; the secretions of the patient are also infectious, especially the saliva, but it is uncertain whether this is due to the saliva *per se*, or to the fact that it is ordinarily mixed with the discharge from the syphilitic lesions within the mouth.

The third period is one in which the patient has recovered from the constitutional disease, but the infective agent, whether it be a micro-organism or not, remains behind in certain tissues as an actual or potential cause of disease affecting that particular tissue; this tertiary period differs much in appearance and characteristics from the two preceding stages, but no hard and fast line can be drawn between them; one point, however, is important, viz., that it is either non-infectious, or at any rate much less infectious than the other two.

The primary sore, or "chancre" is the first to consider, it occurs always as the direct result of local inoculation from another case. Infection occurs through kissing; the use of drinking vessels, spoons, pipes, etc, in common; and certain instruments used within the mouth. The first appearance, three to six weeks after inoculation, consists of a small, red, raised papule at the infected spot, there is not as a rule much pain, the papule extends and becomes intensely hard at its base and is then known as a "hard" or "Hunterian chancre;" later on ulceration occurs at the surface and the neighbouring lymphatic glands become enlarged and hard. After some five

or six weeks the chancre commences to heal, and apparently becomes quite well with the exception of some hardness remaining behind. From six to twelve weeks after inoculation or even later, the secondary symptoms appear ; in the mouth slight sore throat, with a general congestion of the fauces and palate is often the first of these. The next stage is characterised by the appearance of "mucous plaques" or "condylomata," these are little raised patches on the mucous membrane, of irregular shape, not above $\frac{1}{16}$ of an inch in height and well defined at their edges, they are white in colour owing to the thickened epithelium on the surface, the red colour of the mucous membrane being seen as it were, through a layer of opaque or ground glass ; in many cases they closely resemble a patch of mucous membrane to which a stick of nitrate of silver has been applied.

These patches are especially common on the inner surface of the lips especially about the corners of the mouth, on the inner surface of the cheeks, especially along the line opposite the separation of the upper and lower teeth ; they also occur on the pillars of the fauces, the hard and soft palate, the uvula, and tongue. Sometimes the tongue shows instead of a raised patch, a depressed, smooth, irregular area sensitive to the touch, in which the papillæ are smoothed down below the level of the surrounding healthy tissues. The next stage of secondary symptoms in the mouth is that of syphilitic ulceration. This often affects the same parts as are affected by the mucous plaques, the ulcerations are characteristic and generally of irregular shape, crescentic, "horse-shoe" shaped, or at any rate, bounded by curved lines ; some of them are elongated curves which have been described as resembling "snail tracks." All the ulcerations in this stage are superficial, they extend in a serpiginous manner, there is not much discharge and the base of the ulcer is often greyish in

colour. No part of the mouth is really free from them ; but the pharynx, tonsils, palate, and sides and tip of the tongue are very common situations ; they are often more or less symmetrical.

One important point to be noted in all these forms of buccal syphilis, is the disparity between the extent of the local disease and the subjective symptoms of pain and dysphagia from which the patient suffers. It is not uncommon to hear a patient complain that he has a slight sore throat but that it does not trouble him much, and to find on examination extensive ulcerations and other lesions, which had they been due to any other form of disease, would have entailed great suffering.

The final stage of syphilitic mouth lesions is seen in the scars which not infrequently remain after the local ulcerations have healed ; these are important as indications of past disease, they are often found near the angles of the mouth, and on the soft palate or fauces, where contraction of the scar tissue may produce deformity of the parts, such as dragging the uvula to one side, or even fixing the tip to the adjoining tissues.

To sum up the chief lesions of buccal syphilis in the secondary stage, we have firstly the superficial congestion, secondly the raising up of the mucous membrane into mucous plaques, thirdly the breaking down of the diseased tissue so as to form ulcerations, and fourthly the presence of scars telling a history of past lesions.

The tertiary lesions of syphilis on account of their much less infective character are less important to the dentist than the primary and secondary. They consist chiefly in what are called "gummata," a very low type of inflammatory disease in which a large number of cells are produced at one point of the affected tissue ; these accumulate and form a distinct tumour, the blood supply of the new-formed cells is cut off,

partially by the pressure of the cells themselves, but also by coexistent disease of the blood vessels ; as a consequence the cells die, undergo degeneration and the gumma becomes soft, ulceration of the surface occurs, and the contents are discharged, leaving a deep ulcer which heals up by a considerable and permanent scar. Sometimes gummata penetrate deeply, erode the bones and cause perforation of the palate, or great deformity in the nose or other parts. The tongue is also affected and the gumma may be mistaken for cancer.

(Dr. Wild exhibited a number of coloured plates showing various syphilitic lesions of the mouth, and after briefly, referring to congenital syphilis in children and its effects, spoke of the relation which "Leucoplakia" bore to syphilis on the one hand and cancer on the other.)

He then said,—

I have brought this paper before you to-night because it is important that the dentist, both for his own sake and the sake of his patients, should be able to recognise the ordinary signs of syphilis when examining the mouth of a patient, and the usual text books of dental surgery hardly touch upon the effects of buccal syphilis, certainly the information given is so meagre, that without some previous experience it is hardly possible for a dentist to recognise the lesions when he sees them.

Owing to the fact that many syphilitic patients require the aid of the dentist during the progress of their disease, and especially when under mercurial treatment, all of you are sure to meet with such cases in the course of your practice ; and my object has been to indicate the appearances which should lead you to take all possible precautions in handling the patient, and in the thorough and effectual disinfection of all instruments which have been in contact with the patient, before using them for another case On

account of their prolonged duration and intensely infective nature, the secondary lesions are the most important, and the appearance of anything like a mucous plaque, or a characteristic ulceration should at once put you on your guard in dealing with the case.

In conclusion Dr. Wild thanked the members for the attentive manner in which they had listened to his address.

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 315.)

FITTING SINGLE TUBE TEETH.

The previously described method of adjusting the teeth, and marking the holes for the pins, applies where there are several teeth in a row to be fitted, but where a tube tooth has to be fitted against a natural tooth, it may be held in position by the thumb and finger while the hole is being marked with a broach. After deepening the mark with a suitable pointed instrument, the broach may be passed into the tube, and the point of it made to rest in the mark, thus the broach will represent the pin, and give one a very good idea as to whether the mark is correct or not. Should it not be right it can at this stage be easily altered.

When clearing out the tube of a tooth with a broach, care must be taken not to press the latter too far ; it should fit

loosely, and be pressed against the sides while being rotated. If it is pressed tightly into the tube it is very apt to crack the tooth ; beginners should be particularly warned against this.

It often facilitates the fitting of a tooth, in a space between two natural ones that are clasped, to remove the plate from the model, and fit the tooth to the right length on the model itself ; we have then, when the plate is replaced on the model, practically only the sides of the tooth to look after, an amount of tooth substance (corresponding to the thickness of the plate used) being only required to be ground away from the lingual aspect of the base of the tooth, to allow the part to fit on to the gum as before.

The fine-fitting of the sides of a tooth to a clasp can only be acquired by diligent practice. It is a very good plan for a beginner either to file up and fit a few bone teeth to such spaces, or plaster teeth may be cast in a mould, taking as the pattern the tube tooth ultimately to be used. After a short time the student recognises the convexities of the clasps and teeth, and soon begins to understand how to grind the tooth to fit them.

When fitting a tube tooth against a clasp, it is as well to reduce it nearly to the proper length before grinding any off the side, then in placing it in position to mark the pin, the tooth should be brought close up to the clasp at its neck ; as an example, suppose we say the clasp is against a canine tooth, the crown of the artificial bicuspid should slant slightly backwards. Now when the pin is soldered in, and we bend it slightly to the canine, we shall find that the tooth will not go into its place. If we paint the clasp and try it once more, a mark will be found where it rests, this must be carefully ground away, care being observed at the same time not to interfere with the neck of the tooth. A further bending of the pin towards the canine can then be made, and the

tooth fitted, until it is in its proper upright position, when it will be found after fine-fitting to lie snugly against the clasp, without any division whatever.

FITTING FLAT OR HALF TEETH.

When flat teeth are to be used, it is as well to nearly fit them, before backing, that is fastening to the backs of the teeth, by means of the pins, a piece of plate corresponding to the shape of the back of the tooth, as a means by which it can be soldered to the base plate.

Until the student gains experience in fitting these teeth he may use a little red paint on his model, but the skilled workman rarely has recourse to this aid. The small size of the base or neck of the tooth, enables him to see where it is resting so that it can be accurately fitted, and when the back is adjusted to the tooth, he can then finish the remainder of the fitting with the bite in position; this affords great assistance in regulating the exact position of the tooth as regards projection etc.

Great care should be observed in fitting these teeth that a sufficient amount of tooth substance is left around the pins for strength, and if it is necessary to fit a tooth very short it should be reduced at the point as well as the base, in order to bring about this result. Where a tooth has to be reduced in width to fit into a narrow space, one should be selected with the pins sufficiently close together, or better still with the pins one above the other.

The method of backing a tooth is to take a strip of gold, (No. 8 guage) of the same width as the length of the tooth this is held on the bench-pin with the left hand while the tooth to be backed is held in the right. The pins of the teeth are now rubbed on one end of the gold strip, this will make two parallel lines, if another line is drawn across these two, corresponding to the distance of the pins from the neck of the

tooth, it will give us the exact spot where the holes have to be punched or drilled. When the holes are made, the pins should slip easily through them, until the plate rests against the back of the tooth. A line can now be marked with a sharp pointed broach around the margin of the tooth on the plate, and then the tooth is to be removed and the plate cut and filed to the required shape. If the pins fit tightly into the holes in the metal back, the tooth is very liable to be cracked in soldering.

The holes should also be enlarged a little externally with a chamfering tool, so as to admit of a head being made on the pins by rivetting; it at the same time permits the solder to flush better around the head of the pins. If the teeth are to be rivetted, it may be done safely in the following manner.

After trimming up the back to the proper shape, place it in position on the tooth, then cut off the pins leaving only about the 32nd of an inch projecting through the back metal, see that the back lies perfectly true and steady on the tooth, then paint a spot of borax on the inside of the back to encourage the solder to flow through. We next place the tooth with the back in position upon a piece of hard wax made just sufficiently soft that the front of the tooth can be pressed into it, the wax may rest upon a piece of lead. The wax forms therefore a good support for the whole of the tooth. Now with a rivetting hammer we give the pins a few light blows, so as to form a head to the pins, but not sufficient to draw the back too tightly on to the tooth. Should this be done, we may have, when the teeth are soldered, an expansion taking place in the gold forming the back, and the tooth cracking in consequence.

Another way of fastening the back to the tooth is to place the back in position, then with a fine file reduce the external aspect of the pins until flat; next bend the pins to the right and left flat against the back. If this is done

neatly, it answers admirably, and is strong, but it does not do so well if the pins are left round. There is also less danger of breaking the teeth.

Flat teeth when fitted, should have their backs in intimate contact with the gold base-plate, in order to ensure neat soldering.

The teeth when fitted should be fastened to the plate with hard-wax, the whole is then removed from the model and sunk into an investment of brickdust and plaster.

When hard, the case is warmed up until the wax attaching the teeth to the plate, is softened, it is then removed, and the investment trimmed up; borax is next painted on the plate and backs of teeth, and sufficient solder used to make a good joint.

The case should now be heated over a Bunsen burner and made nearly red-hot, then soldered, and allowed to cool gradually, by placing it in a fireclay pot or other convenient vessel. When cold the investment may be removed and the case placed in H.Cl. to clean it. After this it is filed up and all scratches removed either with file or sculptor, and a surface obtained by rubbing it with water-of-Ayr stone. This latter prepares it for the operation of polishing, which is done by rubbing the case at the lathe with a stiff circular brush using with it finely ground pumice stone, mixed with either water or oil.

As pumice and oil cuts quicker than pumice and water, care must be observed in polishing so as not to rub the plate all one way, or it may be made thin in places.

To polish concavities in the plate, where the lathe brush cannot be made to penetrate, it will be necessary to use a pointed piece of soft wood, charged with pumice, and afterwards with whitening.

After rubbing with pumice, the case should be washed with soap and water, and then polished with whitening or rouge, using a softer brush ; it is again washed with soap in hot water and dried with a nice soft rag.

(To be continued.)

INAUGURAL ADDRESS.*

By G. O. WHITTAKER, L.D.S.Eng.

Gentlemen,—Some few weeks ago, our Secretary honoured me with an invitation from the Council of this Society to become the President for the ensuing twelve months. I at once thought it meant an Inaugural Address, which to me was awe-inspiring. Not feeling fully gifted with the capacity to give an address worthy of the office, I felt a certain amount of diffidence. After mature reflection, I came to the conclusion that if you did not desire me as president, you would not have asked me a second time. Candidly speaking I appreciated the honour too highly to again give a refusal.

I may congratulate the Society on the progress it has made during the reign of your past presidents, and feel sure, that if it advances at the same rate, it will in the near future, prove the best Dental Students' Society in Great Britain and that those of us who are now connected with it, and I hope always will be, will look back with pride, as being amongst its earliest members.

Many subjects suggested themselves as being likely to prove of interest, perhaps the one chosen may not entirely commend itself to you, as being sufficiently scientific or

* Read before the Students' Society of Victoria Dental Hospital, Manchester.

technical, still I hope what I have to say may prove not only interesting but of real practical value to you whilst students, and when commencing practice, the latter a consummation to which you all properly look forward.

I trust that in speaking unreservedly, you must not imagine that I am lecturing or individualising in any way, my desire simply being to convey to you a few hints, which may be considered of value to those entering our profession ; in brief, I might almost style my address, " Hints on the Conduct and Practice of a Dental Surgeon when commencing."

As you are all aware, it is but a few years since the practice of Dentistry became a legally and recognised profession, this being principally brought about by the exertions and labours of our late lamented leader, Sir John Tomes, in whose path of life we cannot do better than endeavour to tread. I might first address myself to those new members and say that I look upon this Society as being social as well as scientific, and that the meetings will bring members of different years' standing into closer bonds of friendship, which intercourse must prove not only a source of pleasure for the present, but a distinct gain in the near future. A spirit of intimacy will naturally induce a genial interchange of ideas, and the discussions which ensue must be productive of some good and often open out to view matters which may not have been propounded before.

I must urge upon students that a close application to Hospital work in all its varying degrees is absolutely essential to the gaining of a thorough grounding in Operative Dentistry. I should advise you to pay particular attention to the teachings of the Demonstrator, to carefully examine and preserve sections of natural teeth which you all have to prepare, remembering that this will be a great aid and assistance in giving you confidence when preparing cavities.

in the mouth of the patient, and you will not be in constant fear of exposing a nerve and losing the confidence of your patient, besides enabling you to prosecute your work more quickly and thoroughly.

Remember thoroughness in preparing a cavity for filling, is the first desideratum. A filling to last, must have a cavity perfectly prepared.

After passing the hands of the Demonstrator pay particular care and attention to the opinions and teachings of the Dental Surgeons. Do not let your mind or attention wander from what he is endeavouring to teach you. Remember that a diffident and careless manner is a great damper to a teacher who gives his time and skill unrewarded, except by the feeling that he is doing good to you personally and endeavouring to elevate the profession as well. Very much may be learnt from a Demonstration however simple.

Another point of grave import, is the necessity of cleanly and tidy habits, both in manner and dress, for they become quite natural and as easy as untidy ones—remember to keep the hands, fingers and finger nails scrupulously clean.

The latter, I refer to the nails, should be kept well trimmed and to use a vulgarism “not in mourning.” To shew the value of this suggestion I might cite an instance where a patient left her Dentist, because he attended her immediately after peeling an orange, the skin adhering to his fingers and nails. Ladies with their finer feelings, are more sensitive to anything lax in this respect.

Instruments well and cleanly kept, well sharpened are more capable of doing good work quickly and occasioning the minimum amount of pain. Also it is a source of great satisfaction to a patient to know that everything is clean and free from contagion. Instruments, more especially forceps, should be thoroughly cleansed by the use of an antiseptic. After operating wipe the instrument free of any blood or

matter adhering thereto, not leaving the forceps exposed to the next patient's view, with perhaps a tooth or root in the beak ; also rinse the spittoon before the entry of the next patient. If the sight of blood is fearful to an animal, how much more so to a sensitive human being.

Another thing, gentlemen, let me advise you all to go in for the class examinations ; for I think we gain an amount of knowledge and resource by so doing. The practice ensured will enable you to remember the details of the subject much better. I will give you an instance. When a student in London, I thought that I would try for the operating prize. During examination I had an elderly woman patient to operate on. She pointed to two left lower bicuspid roots, complaining of the pain being there. I was at the time under examination for Diagnosis and Extraction. Unthinkingly I accepted her version, believing the pain proceeded from thence, by reason that one root was slightly tender, so I got ready the right forceps for extracting under nitrous oxide.

One of the Examiners said "Are you sure the pain proceeds from those roots?" I replied, "I think so." Then he said, "Don't you think it would be better to enquire of the patient the kind of pain she has, and so get a better history of the case?" To cut the story short the pain proceeded from the left lower wisdom tooth with nerve exposed, which tooth I eventually extracted.

Later I found that ten marks had been deducted from my total for my lack of thought, or carelessness of judgment. This was really a good lesson to me, for now in practice, I always endeavour to obtain full particulars of the case, and so make sure which tooth is the real cause of the mischief. I could mention several other instances in my class examinations where I gained an amount of information which later has stood me in good stead. Therefore my advice is always go in for class examinations both written and practical ; the

former enables you to write your answers more concisely, and to arrange your paper in proper order.

It is a source of irritation to an Examiner to have to search your papers through for the answer to any one particular question. I have found myself having to do this on more than one occasion.

Now, gentlemen, with regard to private practice. When you have obtained your diploma, do not imagine that you are going to jump into a fashionable and lucrative practice all at once. To acquire such takes time and a vast amount of care, patience and forethought.

It cannot be too frequently impressed upon us all, that a gentle and sympathetic manner whilst receiving and attending to patients is of paramount importance, as it must create in their minds the idea that everything that is possible for the operator's skill to do will be done to relieve their sufferings,—this in hospital as well as in a private practice.

We must not forget the fact that patients are human beings of varying temperaments and susceptibilities, and of varying capacity of pain bearing and pain appreciation. Above all gain the patient's confidence, and you will be better able to undertake difficult and painful operations owing to the assistance they afford you, by making up their minds to bear pain which such operations engender, rendering your task more easy.

We are all aware of the discomfort and loss of time occasioned us by a patient's nervousness and restlessness whilst being operated upon.

Imagination goes a long way with many poor mortals, and leads many patients to suffer unreal or imaginary pain—more especially is this the case if they think the operator at all rough or unsympathetic in his treatment.

Also operations which are proper and justifiable in some cases are quite unjustifiable in others. Remember that the

state of health of a patient may be below par, more especially is this the case with women. Operations could be better conducted at a time when the patient was in normal health.

Gaining a patient's confidence, is, as I have said before, of paramount importance, more especially in the case of children. Bear in mind that people now-a-days are far better educated respecting their own and their children's teeth than was the case 15 or 20 years ago, or before the passing of the Dental Act. They now see the necessity of bringing them when quite young to the Dentist. My advice is, never extract a child's tooth at the first visit, for it will always remember it. If you can, examine them, and in the teeth decayed, insert a little cotton wool with a very weak solution of carbolic acid or carbolized resin. If too strong, it burns a child's tongue and frightens it. Again do as little to hurt it, both on the first and second visit. By this it will have lost any fear of you it might naturally have had—and even when hurt, you will still retain its confidence. It is astonishing the amount of pain children will bear when they have perfect trust in you. Endeavour to educate the guardians to the necessity of periodical visits, even if these visits do not result in any operation so much the better for the child, as it will have less to fear when it is essential a painful operation should be performed.

Very valuable advice was tendered me some years ago by an old and esteemed friend. When patients come, as they occasionally do, to solicit advice, and to enquire the number of fillings and approximate cost, point out to them those cavities which require immediate treatment, also pointing out cavities which are not much advanced in decay and which may safely be left for a few months. By so doing you do not overawe the patient, either with too big a fee or too many visits. Not only do you gain the patient's confidence, but you cultivate that true professional spirit, the feeling that

when patients come to consult us about their teeth they are placing a precious trust in our hands, which it behoves us very diligently to safe-guard and protect, the more so, that they themselves are but imperfectly incapable of judging of the value of our work, and are in so many cases apt to prefer the shoddy work, because for the time, simplest and least unpleasant. I have occasionally heard patients say "Oh! if it is going to take all that time and cost so much, I will let them decay further and then have them all out, and have artificial ones inserted later."

Therefore I think it behoves us to dwell on the value of these organs, which, alas, are too often sadly neglected, and to try and educate the patient to a better appreciation of the value of their own natural teeth, and the necessity of saving them for their health's sake.

Another matter to which I might revert. This is with regard to the medical man. Do not let them dictate to you and say what ought to be done, saying, "That this tooth or the other must be extracted," as I have known them do. Let them know that you are a specialist on the mouth, and therefore more capable of judging the exact requirements of the case than they; of course this can be done with tact and discretion on your part, as, for instance, you might say, "Don't you think, doctor, we might treat and save the tooth, or do this way or that way?"

With all due respect to the medical men, I may say that a great number of them are very ignorant with regard to the treating and saving of teeth; they will respect you all the more and seek your advice, if you do not allow them to tell you your speciality.

It is also wise at the same time, to bear in mind that a Doctor can do a lot of good or harm to a Dentist, but let us try and educate them, for they require it, and patients will not then have that ruthless extraction which was in vogue a

few years back, for crowning and small bridgework is undoubtedly coming rapidly to the fore, and people are becoming alive to the necessity of preserving the roots of teeth. You, as students, have a great responsibility in this matter, for you come in contact with so many students who are to become our future medical men.

You have the chance of pointing out all the harm that is done by the thoughtlessness of Doctors not seeing that their patients consult Dentists more frequently, and have their mouths put in a thoroughly healthy condition so essential to the proper mastication and digestion of food. By so doing you will in all probability stimulate these students to learn a little more about Dentistry and seeing the interest you take in your profession, they may not unnaturally prove in the future some of your best supporters. They will see that the properly qualified and educated Dentist is the man of whom to seek advice and not the advertising quack. Unfortunately for the dignity of the profession there are a large number of registered dentists, who failing to form a practice legitimately and by skilful and conscientious work, endeavour to make up for their lack of skill by the use of advertisements as a means of attracting patients. The truly conscientious and capable man would not deign to resort to such practices but would rely solely on good and honest work performed, and the recommendations of patients skillfully treated.

I should strongly impress on all the necessity of immediate registration on the Dental Register, after the obtaining of your Diploma. No dentist can by law demand his fee unless he is so registered. It also opens the way to membership of any Society, such as the British Dental Association, of which Association, I hope to see you all members before long, thus strengthening this Association which is endeavouring to raise our professional status and stamp out this abominable quackery.

In the event of a patient seeking your advice in preference to that of a fellow practitioner who is conducting his practice on purely ethical lines, although he may not have had the advantage of a college education, do not disparage the work he may have done, even if you do not consider it of the best, for remember that none of us always do perfect work. Patients will not think more highly of your professional ability for condemning a brother practitioner. If the latter hears of it he may retaliate and so cause unpleasantness to all concerned. How much pleasanter for all, and what is nicer than having the good-will and fellowship of a brother practitioner. Praise from a fellow dentist is far more gratifying than that of a hundred patients.

After examining the mouth of a patient for a future appointment, always make a note of the tooth or teeth which you purpose attending to. This will give you an idea of the length of time required for the work, so that you can make the appointment accordingly. Also a patient is much gratified that you should have remembered the particular tooth which requires attention.

Another point in operative work to which I wish to draw your attention. Learn to operate by the reflection of the mirror. By so doing you save yourself a back-ache at the end of a day's hard work, and save incipient curvature of the spine. By its use you also avoid the necessity of breathing into a patient's face, or the tendency to lean on a patient's breast, which is very unpleasant to both.

After filling a tooth, whether with amalgam or gold, see that the bite is clear and suggest to your patient the advisability of rinsing the mouth with water. This will clear the gums and mouth of any bits, which if found by the patient after leaving you, will give the idea that the filling done by you is defective and is coming out.

In conclusion, gentlemen, let me thank you for the very patient hearing you have given me, and for the honour conferred on me in electing me your president. To conserve and promote the interests and welfare of our Society will always be my utmost endeavour.

ATTACKS OF STRIDULOUS LARYNGITIS COINCIDING EXACTLY WITH APPEARANCE OF CERTAIN TEETH.

Coulon (*La Médecine Infantile*, 1895, ii. 643) reports that three to seven days before the appearance of the first tooth, at eight months, of the inferior canines at nineteen months and of the last molars at twenty-four months, there were attacks of false croup coming on in the middle of the night and lasting a few hours. Constipation followed by diarrhoea also usually preceded by a few days the cutting of every tooth.

SOLUTIONS.—The calculation of percentage solutions is always based upon the number of grains of water in a fluid ounce. The exact weight is four hundred and fifty-five grains, and the simplest way is to multiply this number by the percentage desired. In other words, we take one grain of the drug for every hundred grains of water. Thus to obtain a four per cent solution, we multiply four hundred and fifty-five grains by four per cent, which gives eighteen and two-tenths grains, or, roughly speaking, eighteen grains to the fluid ounce of water.—*Medical Brief*.

British Journal of Dental Science.

LONDON, MAY 1, 1896.

A BRIDGE-WORK CORRESPONDENCE.

At the close of last year we reported the action of *COMER v GWYNNE*. in which the plaintiff sought to recover one hundred guineas for some removable bridge-work. The defendant who had paid half this amount into Court received back twenty guineas, as the Judge considered that the lady had not had her attention called to the charges beforehand, and evidence was given to show that there was nothing unusual in the work done. In commenting upon this case at the time we were obliged to admit that we were ignorant of the details of the "Comer system," but thanks to an "interview" published in *Kensington Society*, we have been enlightened. Here is the extract from "A Chat with Dr. Frank Comer" :—

"This is a model," he continued, "of a lower jaw with a gap on each side, that on the right side prepared for a *fixed* bridge, the hollow crowns on each end of which are filled with cement and pressed down over the coned roots, while the gap on the left side is prepared for the attachment of my *removable* bridge by having shallow, hollow gold caps cemented on to coned roots to protect them from decay and to prevent their splitting, and pure platinum screws screwed through the gold caps and well into the roots, leaving about one-eighth inch projecting above the caps. The ends of the bridge are then slipped over the screws and small gold or platinum nuts screwed tightly down and wedged with a little gold foil. The removable portion being made in duplicate, in the event of one of the porcelain teeth breaking off the case can easily be removed and the duplicate attached in a few moments by any member of the wearer's household with the aid of a little key which is supplied with the duplicate set."

Judging from a correspondence which has been running in *Invention* for the last few months, this contemporary also published a description of the "system." The first

letters we saw were from patients expressing their entire satisfaction ; then came one from a Member of the Institute of Civil Engineers, who with an income of £200 a year, wondered whether he could indulge in the luxury of this elaborate work. He had heard of a case where the fee "paid at a certain American dental establishment in London for a fixed bridge case of only eight teeth" would have taken more than two years of his earnings to pay. The following week he was informed by Mr. COMER that the removable bridges were chiefly intended for those to whom expense was a small matter in comparison with personal comfort, but that patients with limited means were met in a liberal spirit. But in addition to this letter there was also one for the benefit of the Civil Engineer, signed with the ominous letters L.D.S. This correspondent quoted the circumstances of the law-suit above referred to, and challenged Mr. COMER to supply and authenticate some dates as to when the "invention" took place. L.D.S. had no doubt but that he would be able to refer to printed works which would antedate the "discovery" by many years. This brings us up to April 4th, when Mr. COMER accused Mr. CHARLES TOMES of attacking him personally over the signature of L.D.S. We must say that we failed to find the least indication for such a contention, but the explanation may be found in Mr. COMER's anxiety to air his grievance against Mr. TOMES who had given evidence in the celebrated lawsuit. It seems that immediately after the trial the plaintiff wrote to the editors of half a dozen leading papers, challenging Mr. TOMES' evidence, but the editors declined to publish the letter, and it has apparently been reserved for *Invention* to put this document on record and in full. Indeed the editor of that paper was invited to act as a competent and unprejudiced judge in the event of Mr. TOMES attempting to prove his statements "by the production of patients wearing removable bridges inserted by himself and others, who are willing to have their cases removed and the capped teeth carefully examined." This long letter contains, however, one cheering piece of information for the enquiring civil engineer

who was hankering after luxuries. Mr. COMER had completed some experiments upon which he had been engaged, and was now able to announce that he was prepared to insert better bridges at about one-fourth of the cost. Naturally, L.D.S. returned to the attack, and besides stating that his only acquaintance with Mr. TOMES was of ten minutes' duration at an examination table, closed his letter as follows:—"Either Mr. Comer has so far improved his manipulative ability as to be able to perform an operation, which last week took him four hours, in one hour, and with a consequent reduction of his fee to one-fourth, or he has previously been in the habit of charging four times as much as his work is worth, and has now reduced his fees to the basis indicated by Mr. Tomes." Mr. COMER described this letter as scurrilous and repeated his challenge to Mr. TOMES. Two of his patients added a tribute of praise; one of them, a lady, furnished a woodcut representing an external incision along the body of the jaw, and a dental engine at work in the inferior dental canal. She offered this to give an idea of the "slight operation" proposed by Mr. TOMES in her case, but which she happily escaped by consulting Mr. COMER.

We offer this condensed account of a correspondence because we think our readers should be made aware of its existence, but of which they would otherwise probably be ignorant. Writing as we do for the professional and not the lay reader, much comment is unnecessary. No apology need be offered to Mr. COMER, and we hope that Mr. TOMES, who, as we think, naturally has not volunteered the use of his name in the correspondence, will excuse our presenting the case to our readers. The editor of *Invention* has thought it necessary to threaten to close his columns if his correspondents enter into any further personalities.

EXTRACTION AS A PUNISHMENT.—We have already recorded the case of a schoolmaster in Austria who extracted the decayed teeth of his pupils instead of applying the birch as a punishment. We now read of an instance nearer home,

where the same theory has been practically tried. A pupil teacher at Preston has been fined for extracting children's teeth, but here it was declared that sound teeth were sacrificed. The *patients* had to choose between the cane and the forceps. Even if it could be proved that the treatment had conferred benefit in crowded arches or cases of undue retention, we are still of opinion that children should not be encouraged to regard such attention as a punishment. Is it possible that the Preston teacher derived his inspiration from a perusal of the Austrian case, or is it an instance of an independent discovery by scholastic minds in different countries?

FATAL CASE OF SWALLOWING A DENTURE.—A jury at Westminster has returned a verdict of "Accidental Death" in the case of Frederick William Tidmarsh, of Brixton. The widow of the deceased said that her husband came home about eleven o'clock and immediately went to bed. He had a bad cold and said he was tired. While he was asleep two false teeth which he had in the right side of his face, and which he had not removed when he went to bed, slipped down his throat. A doctor was sent for, but was unable to do anything for the deceased, who was in great pain, the teeth having become fixed in the throat. The next day he was removed to the Westminster Hospital, where he died. Dr. Penney, house physician at Westminster Hospital, said an attempt was made to remove the teeth by forceps, but without success. Deceased died from the effects of an operation to remove the teeth through the neck.

DEATHS UNDER CHLOROFORM.—In the *Glasgow Mail* a case is reported to have occurred in Jedburgh. A boy named James Broomfield, aged ten years, had for some time been suffering from his teeth and gums and went to Jedburgh to have some teeth extracted by Mr. Pringle of Edinburgh.

Dr. Hume was in attendance, and chloroform was administered. After three teeth had been extracted the boy's heart ceased to beat, and though artificial respiration was resorted to it proved of no avail. The same boy had previously eight teeth taken out under chloroform without any ill consequences resulting. We make no comment at present upon the facts of the case at Idle, where the herbalist who administered the chloroform has been committed for trial; but the father of the deceased has had a sad experience. Within the last eighteen months he has lost two other children by accidental death: one was run over and the other burnt.

COCAINE POISONING.—Dr. J. O. W. Barratt narrates in *The British Medical Journal* a case of cocaine poisoning which fortunately did not prove fatal. A medical man about 30 years of age, administered to himself two hypodermic injections, with an interval of five minutes, to relieve pain. He then found that the last solution used was a thirty-five per cent. one instead of one per cent., and that he had received about 14 grains. He felt weak and laid down; Dr. Barratt who saw him about eight minutes afterwards, found him almost pulseless at the wrist. Five minims of ether were injected and the dose repeated every seven or ten minutes for two hours and a half. The patient was quite conscious and there were no convulsions. Brandy and hot tea were also administered, and the kidneys and skin acted freely. At the end of an hour there was intermittent action of the heart, but the pulse had largely regained its tone at the end of five hours.

DEATH OF M. P. DUBOIS.—We very much regret to hear that M. P. Dubois, one of the leaders of the Profession in France, succumbed on April 8th, to the effects of a terrible accident. The deceased gentleman was Editor of *L'Odontologie*, President of the General Association of French Dentists, and one of the Professors in the Paris Dental School.

ALUMINIUM CROWNS.—Here is a question propounded to one of the American Journals. An aluminum crown being fitted to a root, was noticed to have a white, fluffy deposit upon it when removed from the mouth. The cusps were loaded with ordinary amalgam and the crown immediately cemented on with oxyphosphate of zinc. Patient complained of a sour, metallic taste. The same day he returned; the crown feeling and tasting very unpleasant. Upon entering the office he pressed the crown with his tongue, when it came off. He lifted it from his mouth, when it immediately became so hot that he could only hold it by letting it drop from one hand to the other rapidly. After a short time the heat subsided, when the crown was found to be riddled with holes. What was the chemical action? What caused it?

Manipulative Miscellany,

It is requested that all new instruments or articles which it is wished to have described under this heading, be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

TABLOIDS AND SOLOIDS.



Messrs. Burroughs, Wellcome and Co, send us further examples of their extremely convenient preparations. Compound Caffeine Tabloids contain three grains of Antipyrin and one of Caffeine, the latter being calculated to obviate any cardiac depression caused by the former. Both bodies have, however, an analgesic action and the tabloids may be employed in certain cases of neuralgia and megrim.

The "soloids" now to hand differ in shape and colour to distinguish them from the tabloids intended for internal use. They contain exactly five grains of undiluted Carbolie Acid, and may be used as an escarotic by being rubbed over the affected part, or dissolved in five ounces of water form an antiseptic spray and disinfectant. Two sizes, both of the Caffeine Tabloids and the antiseptic Soloids, are prepared containing 25 and 100 respectively.

Review.

The Dentists' Register for this year contains the names of 1425 licentiates, these constituting 28 per cent of the whole number. 712 have the London diploma, Dublin comes next with 447, Edinburgh 144, and Glasgow 122. 183 have registered Surgical and Medical qualifications. Those registered as having been in practice (and without a dental diploma) number 3452 and there are 31 others who add a surgical qualification. We regret to find that the Register is not altogether free from errors as the names of some deceased Dentists and of others whose "addresses" have not found them, are still retained.

Abstracts of British & Foreign Journals.

THE GLENOID FOSSA; THE MOVEMENT OF THE MANDIBLE; THE CUSPS OF THE TEETH.

By Dr. W. E. WALKER, of Pass Christian, Mississippi.

Without repeating what is found "in the books" on these topics, he referred to the statement generally made, that the movement of the condyle in the fossa is invariably described as "forward." For reasons to be given he was led to close observation on this point, and found that the movement is

really a combined "forward and downward" movement, due to the incline or slant of the roof of the glenoid fossa of the condyle, both in its anterior and lateral excursions, traversing a course forming an angle on an average of about 35° to a line perpendicular to the facial line, or of about 55° to the facial line. The condyle, not swinging directly from its upper surface, but as though pivoted in an imaginary slot about fifteen millimeters above its upper surface, all of the condyle above this point moving forward, while all below it (the ramus) swings back, in opening the mouth, the peculiar articulation of the mandible gives it a back and forward rocking motion, and also a swinging or see-sawing motion from side to side in taking the position affording incising and the grinding articulation of the teeth in mastication. These movements, as also the articulation of the teeth, cannot be studied from the naked skull, as the glenoid fossa is then emptied of its intro-articular fibro-cartilage, its double synovial sacs and its membranes, leaving a space between the upper surface of the condyle and the roof of the glenoid fossa, so that when the condyle is thrown up in the socket the teeth fail to articulate, though they occlude correctly when in the position of rest. These movements must be studied either from the living subject (selecting as their accommodating subject with no superfluity of flesh), or from a properly conducted articulator, which shall permit a perfect reproduction of all the movements of the mandible, including the "downward and forward" course traversed by the condyle, with the consequent drop of the ramus, influencing the articulation of the teeth in the varied positions of the jaw.

The movement of the condyle constitutes an important factor to be borne in mind in the studies of the articulation of the teeth, as for the shaping of artificial cusps, whether in filling, crown-work, bridge-work, or plate-work; in the study of the natural cusps, with a view to bettering the articulation, both in the treatment of pyorrhœa alveolaris, and in orthodontia: in the study of diseases of the facial muscles, or of the glenoid fossa, etc.

He said that he was first led to the study of the subjects named in the title of his paper from meeting with unsatisfactory results in the use of the Bonwill articulator, articulating artificial teeth by the rules laid down by Dr. Bonwill, the articulation of the teeth in the mouth not being the same as in the Bonwill articulator, the occlusion, however, being as perfect and the same in the mouth as in the articulator.

Seeking the cause for this difference in articulation, he began the study of casts or models of the natural teeth placed in the Bonwill articulator, finding that while occlusion would be perfect, he would not produce the normal points of contact of the cusps in the different portions of the jaw as found in the mouth from which the casts were taken. Having verified this observation from the study of casts of a large number of as nearly normal teeth as we meet with, studying the articulation of the cusps, both in the mouth and from the casts in the Bonwill articulator, careful experimentation showed that the right angle found in that articulator at the junction of the parts representing the ramus, and the condyle moving in the glenoid fossa, was the cause of the defective articulation; a Bonwill articulator remodelled in such a manner as to raise the portion carrying the spiral springs until the angle was increased an average of thirty-five degrees, permitting the correct articulation of the teeth of a large number of models, in any position in which the lower jaw, either of the mouth or of the articulator, can be placed, whether as for "biting" or as for "grinding," either on the right side or the left. Artificial teeth having the cusps modelled, or the natural teeth so remodelled, would also articulate correctly in the mouth.

The articulator so remodelled he christened the "Walker-Bonwill" articulator.

Further experiments showed, however, that it was necessary to have *an adjustable angle*, to meet the variations from the average (or what might be termed *the normal*) ranging from 30° to 45° ; an extreme case of irregularity registering as low as $22\frac{1}{2}^{\circ}$.

The articulator constructed with the adjustable angle, with set screws to secure it and gauges to register the degree of the angle found in individual cases, which sometimes varies even in the two sides of the same face, with a further modification enabling the correction of "a wrong bite," constitutes the "Walker Physiological Articulator," because it is not only automatically but also physiologically (that is functionally) correct throughout.

Seeking the cause of the peculiar features in the articulation of models of the natural teeth, in the movements described by the natural teeth, in the movements described by the lower jaw of the reconstructed articulator, led to the discovery of the *downward* as well as "forward" movement of the con-

dyle in the antero and lateral excursions of the mandible, and also in "opening the mouth ; which so far as he has been able to ascertain, has hitherto escaped observation, or perhaps not been deemed of sufficient importance to be placed on record in the literature of human anatomy. Its practical importance to the dental specialist has been indicated.

To reproduce with artificial teeth the articulation of the natural teeth, in order to give the grinding and biting functions to artificial dentures, instead of the usual up and down *mashing* action of full dentures with nearly cusplless teeth, led to the minute study of the cusps of the human teeth, both in the mouth and from models and their inter-articulation. This led to the discovery of what might be called the law of the cusps, the variation in the distance from the base of the sulcus to the point of the cusp from the main lower cusps of the second bicuspid increasing distally in the superior lingual cusps and the inferior buccal cusps, conversely decreasing distally in the superior buccal cusps and the inferior lingual cusps.

This is most clearly seen by placing the model of as perfect a set of natural teeth as can be obtained, *cusps downward*, on a clear slab of glass, bringing the successive pairs of teeth under observation to the edge of the glass, where the relative height of the cusps will, as a rule, be found as stated.

A diagram illustrated the "law of the cusps" in the superior teeth showing the short lingual and the long buccal cusp of the first bicuspid, the nearly level cusps of the second bicuspid and the gradually lengthening lingual and decreasing buccal cusps of one side of the mouth, the reverse condition being found in the inferior molars. He also pointed out the fact that the difference in the planes of the buccal and lingual cusps is really greater in the mouth than appears on holding a tooth out of the mouth with its long axis vertical, as is seen in the usual book illustrations, the inferior molars in the mouth leaning lingually, and the superior molars buccally, increasing the apparent height of the cusps which are raised by their inclination from the vertical, and conversely decreasing the apparent height of the cusps which are lowered.

As the superior lingual and the inferior buccal cusps increase thus in length as we proceed distally, interference of the cusp's lateral movements of the mandible would be inevitable were it not for the drop of the ramus caused by the condyle not only moving *forward* but also gliding *downward* on the slant of the incline of the roof of the glenoid fossa.

The articulation of artificial teeth with cusps indicates the use of an articulator which provides for the downward motion of the condyle and the consequent drop of the ramus preventing interference in the cusps.

The Dental Register.

TO RENEW RUBBER DAM CLAMPS.

By W. J. MILLER, Chicago.

To brighten and make nearly as nice as new, rubber-dam clamps that have lost the plating and become rusty and discoloured, dip them in a bath of sulphuric acid, then remove, and with brush-wheel and pumice make bright. Wash clean and dip in a strong solution of cyanide of potassium, and they are ready for the plating solution. This is made as follows : Put in a six-ounce bottle about ten cent's worth of nitrate of silver and four ounces of water. When thoroughly dissolved, add strong solution of common salt till the curdled appearance given by the salt ceases to form. When settled, use the clear portion for a battery. To make a simple and inexpensive battery, put the liquid in a glass tumbler ; having two narrow strips of zinc, one to hook on to the edge of the tumbler, the other to hold clamp or article to be plated in solution. On the upper end or hook of the zinc strip to hook on the side of the tumbler, soft-solder a piece of copper wire long enough to reach across tumbler and down half way the opposite side ; and on the other end of the wire solder a ten-cent piece of silver for an anode. Put sufficient plating solution in the tumbler to cover the article to be plated, leaving them in for fifteen or twenty minutes, or till nicely covered. Now remove, and with brush-wheel brighten it. Repeat as many times as you wish ; each time gives an extra plating. Other uses will be suggested ; for nothing is more attractive in a dental office than bright, clean instruments.

Southern Dental Journal.

AN UNCOMMON CASE.

By Dr. DAISH.

A girl, thirteen years of age, presented herself on the 22rd of June, with a swelling on her lower jaw, left side. The first molar and first bicuspid were quite healthy, the second premolar also appeared to be sound, but as this was the last of the temporary teeth, it was extracted in the hope of reducing the swelling and giving the second bicuspid an opportunity to erupt. The roots of the temporary tooth were only slightly resorbed. As some pus came out of the alveolus after the extraction, a poultice was prescribed for a few days. The girl did not come back till after several weeks. The poultice had been used, as there was still pus which had a very disagreeable odour. On the 13th of August she was sent to the hospital, and on the following day she was put under the influence of chloroform to find and remove the second bicuspid. The swelling was about the size of a hen's egg, into which an incision was cut from the first molar to the first bicuspid. A large quantity of disagreeable pus flowed from the cut. After much probing the tooth was found, but the position of the roots could not be determined. All attempts to extract it failed. It was determined to pack the incision with iodoform gauze, and wait for a few days. The tampon was renewed every day after the cavity was syringed with boric acid. On the fourth day it was possible to again find the tooth with a probe. It was now close to the first bicuspid, and not far from the opening. Unfortunately in probing it was pushed back to its original place, from which it could not be removed. On the following day, on removing the tampon, it was again found close to the opening, and, with care, was removed with an elevator. Patient remained in the hospital three weeks, during which time the wound was treated daily with permanganate of Potash or boric acid and iodoform gauze. From what could be learned from the girl, the malady was caused by a fall down a flight of stairs some four years previous. A few days after this accident the premolar became very sensitive, and mastication was difficult, but she did not complain nor consult a physician until it took this aggravated and painful form, when she consulted Dr. Daish. In examining the extracted

bicuspid he came to the conclusion that in falling a blow or pressure was exerted on the developing root which injured the pulp and caused it to die before it was fully developed.

Monatsschrift für Zahnheilkunde.

EXCAVATORS VERSUS BURS.

By Dr. F. E. BATTERSHELL.

Some operators go so far as to depend altogether upon the engine in the preparation of cavities for filling. This new habit we think is reprehensible, for several reasons; first excavators remove carious material more rapidly and thoroughly. After burring out a cavity as carefully as can be done, one does not *know* the precise condition without having examined the walls with an excavator. Such search often reveals a branching cavity sometimes as large or even larger than the first; and always discovers carious material beyond the range of engine drills. The rotating process of drilling is so unlike the sweeping effect of cutting with the excavator, that what is run over with the engine drill, is easily turned out and swept away by the excavator. Another valuable point of difference is, that the excavator can always be sharpened and kept sharp, while the bur is becoming progressively duller; consequently when much used, instead of cutting it only rubs. To the many well-known forms, the office forge has supplied an additional one for our use, which others may find serviceable. This form reaches those indentations under the grinding surface of molars and bicuspid, so difficult of access. It is shaped like the letter U; one stem of which, slightly curved and continued, represents the handle. Three or four sizes of this instrument, in spoon shape and hoe shape, will enable the operator to do easily what would be very difficult, and oftentimes undone, with ordinary forms. Again the engine handpiece, encumbered by the heavy coil, is clumsy beside the free and slender excavator. Therefore the touch of the excavator is much more sensitive, which is a very significant quality when approaching the nerve, or when working frail walls. The excavator ought not to be discarded. It once was young, but is now old; yet it has never fussed, or grumbled, or wobbled, or refused to work when treated respectfully.—*The Ohio Dental Journal.*

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The following is the discussion upon the paper by Mr. Tomes "Notes upon Dentine and Enamel," published in our last issue.

Mr. LEON WILLIAMS said he really did not come expecting to be called upon to say anything, and he was sure he was not in that frame of mind which could best express any critical opinion on what they had heard. He was too much pleased with what Mr. Tomes had said; pleased because he knew from what he had seen, that Mr. Tomes' analyses of dentine and enamel were the most careful and the most critical that ever had been made, and pleased also because it always gave a little added feeling of delight to be able to say, "I told you so." He believed that he (Mr. Leon Williams) had been on record a number of times during the past fifteen years as affirming the position which Mr. Tomes was able to take after the analyses he had made of enamel based entirely upon deduction from microscopic observation, also based upon Dr. Miller's work. Some members would undoubtedly remember the controversy that he (Mr. Leon Williams) had in New York with Heitzmann and Bödecker on that point, for not long since he stood almost alone in criticising what he regarded as the very unwarrantable claims made with regard to organic matter in enamel. The result of the analyses before them opened up a very wide field for investigation, and they certainly served to modify very much the views which had been held with regard to the causes of decay in teeth. It seemed perfectly evident that these analyses were in line with Dr. Miller's observations and conclusions with regard to the causes of decay in teeth, viz., that they should look very much more to the environment of teeth than to the inherent structure, in finding out the causes of dental caries. It would be regarded, doubtless, as a very heterodox statement if he were to say that in his judgment the most imperfectly formed teeth, so far as inherent structure was concerned—and he meant by that the proportion of lime salts which they contained, or anything other than the grosser defects, such as were found in the enamel—in a perfectly healthy mouth would never decay, and yet it appeared to him

that that was the conclusion arrived at by Mr. Tomes and by Dr. Miller, and that in an unhealthy mouth—and by unhealthy he meant those conditions inimical to the preservation of teeth—in such an unhealthy mouth the most perfectly formed tooth would never be able to resist decay. If they might take these as the conclusions which they were able to reach, they would have a very direct bearing upon the whole treatment of caries of the teeth. With regard to what Mr. Tomes had said concerning the formation of enamel, he would rather not enter into that point, for to say anything in a satisfactory way would take up too much time. He was at the present moment engaged in an extension of the paper that he presented before the Royal Society, stating his views more at length than it would be possible for him to do on that occasion. He therefore asked them to excuse him saying anything further.

Mr. GOADBY said: I have listened with much interest to Mr. Tomes' paper, partly because of the excellence of the paper, and partly as I have been for some time past working at the same subject. Mr. Tomes referred to the sheaths of Neumann as elastin, this I can confirm, having worked out their reaction myself; in fact, I showed my notes to Mr. Maggs some time before Mr. Tomes' paper was first read; but the interesting point in regard to the sheaths is this, in caries the micro-organisms are always found along the dentinal tubes, in front of the main caries, whilst they are always situated along Sharpey's fibres in caries of cement. Now Wälchli has shown that when elastin is decomposed by bacteria, glycocoll or amido-acetic and amido-valerienic acids are produced by the breaking down of the elastin molecule, besides the peptonising action. But glycocoll, in common with other amido acids, has the power of forming compounds with calcium salts, so that *pari passu* with the disintegration of the tooth substance by, say, lactic acid, formed from extrinsic sources, an intrinsic acid production is going on. In several cultures of bacteria isolated from the mouth I have obtained a reaction characteristic of the amido-acetic series, so it seems quite possible to admit that the process of caries is aided in this way. Moreover, amido acids form crystalline compounds, so that, as we have only peptonised chondrin and elastin, and little or no albumen, while the factors of crystalline (pure or impure), compounds are present as amido acids and salts of lime, some of the masses of substance, supposed to be calcospherites, may be these impure crystals.

Mr. MUMMERY said he knew very little about the chemical part of this investigation that had been undertaken by Mr. Tomes. It was an investigation of great interest, and had shown some very important points. With regard to the structure of enamel, it might possibly indicate that the enamel was formed by secretion and not by conversion. Mr. Tomes said it seemed to prove that the enamel was formed in the enamel cell. It might possibly be that the lime salts were secreted by the enamel cells. Of course, this was a view that had been held by many with regard to dentine and known as the secretion view. This new discovery of Mr. Tomes might point to either one or the other, but it did not seem to quite upset the secretion view. Of course the point about the more fully calcified than the other teeth was a matter of great interest, and appeared to be very surprising when they thought of the conditions met with in the mouth.

Mr. C. S. TOMES in reply, said he had already detained the Society so long that he would not say much in addition, and there really was nothing much to reply to. It was exceedingly interesting to him to hear of the action of the bacteria upon elastin, in breaking it up into an amido acid, which was new to him. It was particularly interesting from this point of view, that, knowing how exceedingly resistant a substance elastin was to weak acid, it had always been a difficulty in one's mind to understand exactly how it did get dissolved, and that difficulty Dr. Miller had accounted for by the peptonising action on the part of some of these bacteria—that the elastin having resisted the acid could probably be easily dissolved by something analagous to a peptonising process on the part of the bacteria. He had omitted in his previous remarks to mention the bearing of his paper upon the formation of enamel, which had been touched upon by Mr. Mummery, as to whether it was a conversion^{or} or a secretion. Supposing his guess to be correct, that the lime salt, this calcium phosphate, was deposited inside the enamel cells, it still might be regarded either as secretion or conversion. It might be split between the two; the difference might become narrowed until it became a question of terms.

The President said it only remained for him to propose a hearty vote of thanks to those gentlemen who had contributed communications, and more especially to Mr. Tomes for his paper, which opened up so wide a field of research in the future.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of the Society took place on Tuesday, February 4th, 1896, at the Grand Hotel. Mr. W. Simms, President, in the chair.

CASUAL COMMUNICATIONS.

Mr. W. A. HOOTON showed two specimens of salivary calculus. The larger one weighed 25 grains and was removed from the parotid duct of an old woman over 70 years of age, who was in an extremely neglected condition. It was rather remarkable that its presence in that position should not have caused her any marked inconvenience. It was lodged just within the orifice of the right duct, and a small incision sufficed to remove it. There was no stoppage of the duct. With the smaller specimen there was no history.

Mr. DAVID HEADRIDGE introduced (for Mr. Jones, of Southport) a patient with an Odontome in the region of the right upper 1st and 2nd molars.

DISCUSSION.

Professor LUND said that Dr. Wild had given them a thoroughly excellent *resume* of the subject, and yet so plain and orderly that everyone could follow the thread of his remarks. The practical application of those remarks should be invaluable to them as dentists, because if they did nothing else they would put them on their guard against very possible dangers. He, however, would give them one word of caution, and that was not to conclude too hastily that every appearance of ulceration in the mouth was necessarily syphilitic in its character. A certain amount of time allied to a careful diagnosis of such ulcerations was always necessary to determine their true character. A great many years ago Mr. Berkeley Hill recommended him in all cases where he had a patient suffering from the primary sore of syphilis to send him at once to a dentist to have all decayed teeth removed, and the others put in good trim, as by so doing the secondary lesions were always less virulent.

Mr. ALEX WILSON said the same train of ideas had passed through his mind as had been enunciated by Mr. Lund. He pointed out that in some cases the ulcerations in the mouth primarily due to syphilis sometimes went on for years—now

better, now worse. He thought that in the case of men smoking might have something to do with it, but that explanation would hardly do in the case of women. The main point in keeping an eye on ulcerations in the mouth—particularly in middle-aged people—was that so far from their being of a syphilitic nature they were generally of a malignant class. If such ulcerations did not improve or disappear upon being treated and there were no decayed teeth or other abnormal state of the mouth to account for their presence, then the dentist might nearly always take it for granted that they were malignant.

Mr. DAVID HEADRIDGE exhibited a number of models illustrating the typical form of syphilitic teeth.

Mr. W. A. HOOTON asked Dr. Wild if he had formed any opinion as to how the characteristic conditions of syphilitic teeth originated.

The PRESIDENT, in thanking Dr. Wild on behalf of the Society, for his excellent paper, said that one great lesson to be deduced from the paper was the necessity of taking such care of themselves and their instruments as to guard against the possibility of transmitting the syphilitic germs to themselves or their patients.

Dr. WILD, in reply, said he thanked them most sincerely for their cordial reception of his paper. Turning to the remarks upon his paper, he said he thought everyone would agree with the wisdom of having a patient's teeth attended to before they commenced the mercurial treatment. With regard to Mr. Hooton's question *re* the peculiar appearance of what were known as Hutchinson's teeth, the origin or cause of such defect was quite obscure. If he (Dr. Wild) might venture an opinion he would say it arose from want of nutrition in some shape or other. They knew that in congenital lesions in children the union between the edges of the bones of the upper jaw was sometimes greatly delayed, and he questioned very much, seeing that the two upper central incisors were the teeth most commonly affected and next to the line of division whether the nutrition necessary to the full development of the teeth was not arrested in some way by that cause. That, however, was only a suggestion he had ventured to throw out.

Dental News.

DEATH UNDER CHLOROFORM AT IDLE.

VERDICT OF "MANSLAUGHTER."

The sensational death of Lavinia Sawdon in the operating-chair of a local dentist, while under the influence of chloroform, has naturally created intense excitement among the inhabitants of Idle. The first stage in the proceedings was reached when the District Coroner, Major Taylor, conducted an inquiry into the case at the Alexandra Hotel, Idle, which culminated in the arrest of the dentist, Joseph Priestley, on the coroner's warrant, upon a charge of manslaughter. The inquest extended over three hours and a-half, and the result was awaited with great interest by a crowd of considerable proportions which assembled outside the public-house. Priestley, who is a young man of slender build, apparently about twenty-seven years of age, was present at the inquiry. He appeared to fully realise the difficulties of his position. He was very pale, wore a thoroughly dejected look, and it was observed that occasionally during the taking of the depositions his eyes filled with tears. His interests were watched by Mr. W. I. Crabtree, solicitor, of Bradford, whilst the police were represented by Superintendent Crawshaw.

Formal evidence of identification was first given. Thomas Sawdon, a farm labourer, of Weaverthorpe, near Malton, stated that the deceased, who was fourteen years of age, left home early in December to enter the service of Mr. Lister Sykes, insurance agent, of 9, Howgate, Idle. She was then in good health, and he had never heard her complain of any illness. On Friday he received a telegram informing him of her death, and he arrived at Idle on the Saturday afternoon.

Mrs. Sykes, the employer of the deceased, deposed that the girl entered into her service on December 3rd of last year. She appeared to be in good health, but she had suffered from toothache for several weeks. At about half-past ten on Saturday morning the girl went to have the tooth extracted, but Mr. Priestley was away in Bradford at the time. She went a second time at about a quarter past eleven o'clock, but he had not returned. Witness afterwards sent a message, in response to which Mr. Priestley came to her house about

one o'clock. The deceased had had dinner about half an hour previously. Witness told him that the girl wanted to have a tooth drawn. He examined her mouth and ascertained which tooth it was.

The Coroner : What did he say?—Witness : He said that he could get it out easily, or all right—I forget which of the two phrases he used. He went into his shop to fetch his instruments, and then they both went into another room.

Did you all go into another room?—No ; I stayed with my children in the kitchen. When they came out, after an interval of two or three minutes, the girl was the first to make any remark. She said that Mr. Priestley had only managed to get a piece of the broken tooth out. The deceased asked him if she could “have it out by gas,” as she suffered from it very much, and she was afraid of the pain of another attempt. He said it would cost from 3s. to 3s. 6d., and I thought it was too much, so I asked her if she would wait and see if the tooth got better, as it had done before. But she begged very hard to have it taken out at once. I asked Mr. Priestley if it would pain her at all if gas were administered, and he replied that she would perhaps feel a little light-headed afterwards, but there would be no further inconvenience. The deceased asked my consent three times to the operation being performed with gas, in order to avoid further pain, and at length I said she might go. She went into Mr. Priestley’s house, and as she had not returned at ten minutes to two, I went there, thinking that she might be sick. I saw Miss Priestley, and asked, “Is Vinnie all right?” The girl was being operated on in the shop, and I waited for a few minutes in the kitchen. Miss Priestley went into the shop several times, and then said that her brother was afraid that Vinnie was dying. I ran and called my husband, and we went into the shop. He then went for Dr. Honeyburne, and that gentleman arrived a minute or two afterwards, but the girl was dead. Mr. Priestley seemed very much surprised and upset at the occurrence, and hardly seemed to know what to say about it. The body remained there until eight o'clock at night, and it was then conveyed to my house.

Mr. Crabtree : How long have you known Mr. Priestley ?

The Coroner (interposing) : Has that point anything to do with the purposes of this inquiry ?

Mr. Crabtree : I would like the fact of his having been in practice here for seven years to appear on the depositions.

The Coroner : It does not matter if he has been practising for a thousand years. He is not on the list.

Mr. Crabtree : He does not contend that he is on the list.

The Coroner : Then he is not a registered dentist, and he cannot practise.

Mr. Crabtree : He does not say that he is registered.

The Coroner : He is, therefore, an unqualified man.

Cross-examined by Mr. Crabtree, Mrs. Sykes said that the girl told Mr. Priestley that the tooth was on the right-hand side of the lower jaw. It was only the stump of a tooth.

Miss Sarah Priestley, dressmaker, of 11, Howgate, Idle, stated that she kept house for her brother, Mr. Joseph Priestley, who was, she said, a herbalist and dentist. The deceased came to the house at about a quarter past ten on Friday morning, but Mr. Priestley was away at the time. The girl came in with him about half-past one or two o'clock. They went into the shop, and ten minutes or a quarter of an hour later he called for witness to bring a bowl, as the girl was sick. When witness went into the shop the girl was sitting in a chair, and was leaning slightly forward. A moment or two afterwards he said that there was a change, and that the girl was not breathing quite naturally. Witness fetched Miss Scott, a neighbour, and by her brother's instructions they chafed the girl's hands and applied cotton wool soaked in amyl nitrite to her nostrils.

The Coroner : Did the girl make any movement?—Witness : She appeared to be breathing.

Did she seem to breathe differently after the application of the restorative?—I think she breathed rather more regularly after my brother had worked her arms.

Did you see her move?—I don't remember.

Didn't you take any notice or care anything at all about it?—Well, I didn't remain in the room very long.

The witness went on to say that after Miss Scott came in she informed Mrs. Sykes what had occurred.

The Coroner : When were you told that the girl was dead?—Witness : When Dr. Honeyburne came.

How many bottles did you see about the shop?—Only two ; the bottle containing the chloroform and that containing the amyl nitrite. They were both on a glass case near the chair.

Superintendent Crawshaw : What was the girl's condition when you were called in? Was she conscious or uncon-

scious? Witness: She was unconscious. At least it seemed so to me, but she was beginning to be sick.

Did you see anything applied to her face except from the amyl nitrite bottle?—No.

Was anything being applied to her face when you went in?—I really cannot say whether there was anything but a towel or not.

The next witness was Miss Hannah Scott, a dressmaker, of 20, Howgate, Idle. She said that she was called in at about ten minutes to two on Friday afternoon.

The Coroner: What state was the deceased in then?—Witness: She was making a breathing or sobbing noise occasionally.

Did she seem to recognise you?—Oh, no; not at all. She was insensible.

Did Mr. Priestley say anything about her? I asked him if a doctor had been sent for, and he said no. He was then using restoratives, and doing all he could for the poor girl.

Did he give any reason why he had not summoned medical aid?—He said that it was not necessary to fetch a doctor just then, but I thought it was.

You did not ask him anything?—No, sir. I understood what was the matter. When I went in he was working her arms about, and he asked me to hold the restorative to her nose.

Where did he get it from?—It was in a bottle containing some rather yellowish liquid.

And did she seem to get any better or worse under the treatment?—She seemed to breathe.

For how long after you got there?—It would be a quarter of an hour afterwards.

Did she seem to die very quietly?—Yes, sir.

In reply to Mr. Crabtree, Miss Scott stated that when she asked if a doctor had been sent for the deceased had not begun to be sick.

Police-sergeant Arthur Inman, of 13, Marlborough Road, Idle, said: In consequence of information received, I believe from Mr. Priestley, I went down to his shop in Howgate at a quarter to eight on Friday night. He said, "I have some very bad news to give you. About half-past one o'clock the girl Sawdon came to the shop to have two teeth drawn, and requested me to use chloroform. I accordingly used a quantity of chloroform, and drew one tooth out. I then gave her a second dose, with the intention of drawing another. Immediately I gave her this I saw that she was

dying, and at once sent for Dr. Honeyburne. He arrived about two o'clock, and found her dead." Priestley further stated that he had used about half an ounce of chloroform. I took charge of the bottle, which contained a small quantity. It is labelled "Poison." I afterwards removed the body to Mr. Sykes's house.

The Coroner : Did he make the statement without any question from you ?—Witness : Oh, yes, quite voluntarily.

Mr. Crabtree : Did he tell you that before administering the chloroform he measured it in a graduated glass phial ?—No.

Did you ask about any measure ?—No.

And have you asked for it since ?—No.

Dr. Richard Honeyburne, of Greenfield, Bradford Road, Idle, gave evidence to the effect that he arrived at Mr. Priestley's house about two o'clock on the previous afternoon, in response to a summons.

The Coroner : Did he say anything to you about the girl ?

Witness : No. I looked at her, and saw that she was dead. I said, "what have you been giving her?" and he replied, "Chloroform." I then unfastened her dress, and found that her heart had ceased beating. There were two or three buttons at the top of her dress unfastened, but the remainder of her clothing had not been disturbed. I turned round to Mr. Priestley and said that she was dead. He asked, "what had I better do?" and I replied that it would be best for him to report the matter to the police. When I got to the house the girl had apparently been dead about ten minutes or a quarter of an hour, and the extremities were beginning to grow cold.—Dr. Honeyburne proceeded to give the result of a post mortem examination which he had made of the body. Externally there was nothing unusual except a small bruise on the forehead, over the left eye. There was intense venous congestion in both lungs and other parts of the body. The heart was quite empty, but perfectly healthy. There was no obstruction in the larynx, but the stomach contained a large quantity of undigested food. Upon examining the mouth he perceived that the first left lower molar had been recently extracted, and one fang of the corresponding tooth on the other side appeared to have been broken off some time ago.

The Coroner : In your opinion what was the cause of death ?—Witness : I should think the chloroform.

Was there anything besides that to account for death ?—Nothing whatever.

There could hardly be a healthier person?—No, she was perfectly healthy. There was no disease of any kind about her.

And chloroform is, of course, a poison?—A deadly poison.

For the purpose of an operation under chloroform is it necessary to have more than one person in charge?—It is usual to have someone else to administer the anæsthetic. A medical man would never both administer chloroform and perform the operation.

It is a well known practice, I suppose, to have a second person?—Unless circumstances of extreme urgency occur to prevent it.

Can such an operation be performed by one person properly?—No : though we are sometimes compelled to ignore the custom in cases of absolute necessity.

Superintendent Crawshaw : Is it proper to administer chloroform to a patient in a sitting position?—Witness : No it is not.

Is it usual to administer it after a good meal?—No.

What was the general condition of the girl?—She was well grown and very well nourished. She certainly looked older than fourteen years.

Was it a proper thing to have all her clothes fastened during the operation?—No, it was not. The corsets and bodice should always be unfastened, so as to allow perfect freedom in breathing.

Mr. Crabtree : Although she might appear to be quite healthy, I suppose it is just possible that she might have some weakness which could have escaped observation?—Witness : I think not.

No weakness of the heart?—No.

What are the usual symptoms in cases of this character? Is it usual for the patient to vomit?—Yes, if there is anything in the stomach.

Having regard to the healthy condition of the deceased and the quantity of chloroform administered, are you not rather surprised at the result?—No ; I cannot say that I am.

Do you complain at all of the quantity?—I don't complain of anything.

The Coroner : It is the way in which it is given.

Mr. Crabtree : The quantity of chloroform to be administered varies with different people, I suppose?—Witness : Yes.

But with a healthy person would you consider the dose mentioned to be unreasonable or excessive?

The Coroner (interposing) : I don't think you can tell that. The question can be raised some other time.

In addressing the jury at the conclusion of the evidence, the Coroner said that he did not think it necessary for him to carry the inquiry any further. They had heard the medical evidence, and no one, he felt sure could have the slightest doubt that the unfortunate girl met with her death in consequence of the administration of chloroform. Anybody might draw a person's teeth, and if the person wished to take chloroform it could be administered, but it was of the greatest importance that reasonable precautions should be taken to prevent any mishap. No man had a right to conduct an operation with chloroform by himself, especially if he were not qualified, though it might be done in cases of special urgency. There could be no such necessity in the case of Lavinia Sawdon. The girl was willing to place herself under the dentist's care, and to some extent this might possibly be considered an extenuating circumstance ; but at the same time she was probably unaware of the dangerous nature of the drug. Even if she had full knowledge of the risks of taking the poison, she would have no right to put herself in a position of danger. That would afford no adequate excuse for the person undertaking the operation. Mr. Priestley attempted to draw the girl's teeth. According to his own admissions, he used chloroform, and the girl died under the operation. If the jury considered that there was no necessity whatever for Priestley to administer the anæsthetic, that he neglected to take the necessary precaution of obtaining the services of a medical man, and that he had been guilty of a grossly rash and improper act, they would have no alternative but to bring in a verdict of "Manslaughter." But if they were of opinion that it could not have been avoided, the verdict would merely be, "Death by misadventure." Even with the exercise of the greatest care, patients undergoing operations at the hands of properly-qualified practitioners sometimes died while under the influence of anæsthetics, but a case which was treated by a person comparatively ignorant and in which a doctor was not sent for immediately serious symptoms were discerned, was upon an entirely different footing. If a properly-qualified medical man had performed the operation without assistance, with similar results, it would doubtless be deemed to amount to manslaughter. A person who persisted in dangerous work of this character without

taking due precautions, in the absence of circumstances of special urgency and absolute necessity, ran very grave risks.

The jury, after a lengthy consideration in private, returned a verdict of "Manslaughter" against Priestley, who was immediately placed under arrest.

In reply to Mr. Crabtree, the Coroner intimated that bail would be granted in the sum of £50 and two sureties of £25 each. The prisoner was then removed to the Idle Police Station, and subsequently brought to Bradford to wait his trial at the West Riding Court.

FALSE TEETH AND A POLICEMAN AS "UMPIRE."

In the City of London Court, before Commissioner Kerr, an action was brought by Messrs. G. R. and T. C. Matland, dental surgeons, of London Wall, to recover four guineas for supplying a set of false teeth to the defendant, Mr. D. Carroll, 70, Cable Street, E. The first defence was that the teeth did not fit, Mr. Ricketts, the defendant's counsel, explaining that the condition of payment was that the teeth should be a perfect fit. The plaintiffs took twenty-seven of the defendant's teeth out and then supplied him with a false set which had been uncomfortable ever since. That was a considerable time ago. When the teeth were fitted the defendant said he would try them and see how he got on with them before paying for them. The plaintiffs sent for a policeman, telling the defendant he should not leave until he paid the money. For that false imprisonment—the door having been bolted to prevent him getting out—he now asked for damages. The policeman sent for said that the plaintiffs would not charge the defendant, and he then told the plaintiffs that it was a matter for the County Court and not for police interference.

Mr. Commissioner Kerr: Very good law. (Laughter).

Mr. Shortt, for the plaintiffs, denied that the door was fastened, or that there was any reason for suggesting that there was any false imprisonment.

Mr. Commissioner Kerr: I can quite see that this man was a perfect nuisance to the dentist; but the dentist sent for the policeman. That amounts to a detention, for which I will give the defendant a farthing damages.

Mr. Shortt : We only sent for the policeman as an umpire.

Mr. Commissioner Kerr : What nonsense will be talked next? A police constable as an umpire! Everybody knows that to have false teeth is a troublesome thing. But the defendant has had the teeth for some time and been using them.

Mr. Ricketts : Because he has no others.

Mr. Commissioner Kerr : Nonsense. The man must pay for the teeth after all this.

Judgment was then entered for the plaintiff for the amount claimed and costs, and for the defendant for a farthing, but without costs.

APPOINTMENTS.

Mr. R. S. N. Faro, L.D.S. Eng., has been appointed Dental Surgeon to the Kent and Canterbury Hospital, vice Mr. M. L. Bell, L.D.S. Eng., resigned.

Mr. G. W. Wood, L.D.S., has been appointed Hon. Surgeon Dentist to the Retford Dispensary and Cottage Hospital.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications : name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
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ON THE ORIGIN OF THE MAMMALIAN TEETH.*

By H. W. MARETT TIMS, M.D., F.Z.S.

Lecturer on Biology and Comparative Anatomy, Westminster
Hospital Medical School.

Mr. President and Gentlemen,—Allow me at the commencement to offer my apologies to this Society for presuming to read a paper on a subject so particularly its own, and with my apologies may I tender my sincere thanks.

The subject which I propose to bring before you to-night is the origin of the mammalian teeth, together with a brief outline of some of the more important views connected with it. It is a subject not only of great interest in itself, but also of great importance from both classificatory and phylogenetic points of view.

Since the epoch-making works of Darwin, a vast amount of research has been carried on with the object of tracing out the evolution of almost every organ of the animal body, but curiously enough the teeth have not, until comparatively recently, received the amount of detailed attention that might have been expected. This is the more remarkable when we remember how important palæontology is in filling up the gaps in ancestral history, and that the teeth, the hardest structures in the animal body, are consequently *the* organs most likely to be preserved in geological records ; indeed, in many instances they alone remain.

* Read before the Odontological Society of Great Britain.

Another point adds interest to the study of teeth, namely, the modifications which they undergo in relation to the special kind of food adopted by the animal, and, therefore, the light they throw upon the natural history of their possessors.

Among the elasmobranch fishes, the surface of the skin of the body is covered with dermal denticles, structures having the characters of ordinary teeth. They were formerly of considerable size and served for protection. In other fishes they have become modified into the ordinary fish scales.

The lining membrane of the mouth is derived from the same embryonic layer as the epidermis, and teeth develop here also. In this latter situation they become more pronounced owing to the greater use made of them in seizing and eating prey.

In the teleostean fishes all the bones of the mouth, as well as those of the hyoidean and branchial arches may bear teeth. Among the higher vertebrates, their position becomes more limited, and ultimately they are confined to the pre-maxilla, the maxilla and the mandible. In these situations they may be found upon the inner side as well as upon the free edges of the bones, and as the latter become worn down, fresh ones take their place, thus giving rise to the so-called polyphyodont condition.

Among the reptilia, the teeth of the lower jaw are in some cases fused to a kind of ledge on its inner side, a condition known as pleurodont; in others they are situated at the free edge of the jaw, when they are said to be acrodon. In the crocodilia, the thecodont condition obtains, that is, the teeth are embedded in alveoli, thus adding to their firmness.

As a rule the dentition of the reptilia is homodont, but in Hatteria and some extinct forms of the American trias a heterodont condition is found, that is, the teeth are differentiated into incisiform, caniniform and molariform. This

differentiation attains its maximum only among the mammalia, in which also another very important structure is added to the teeth, the cingulum.

From the time of Cuvier the number and character of the mammalian teeth in the dried skull have been noted, but an important advance was made by Owen, who introduced the terms monophyodont, that is animals with a single set of teeth, and diphyodont or those with two sets, milk and permanent, or deciduous and successional. Among the former were placed the Marsupials, the Edentates and the Cetacea.

Accepting the primary division of Owen, a difficulty at once arose in connection with the Marsupials. It is generally believed that the ancestors of the mammalia were the theromorph reptiles, and these are known to have been polyphyodont. The Marsupials are regarded by many as being among the lowest in the mammalian series and in the direct line of ancestry. The anomaly at once becomes apparent, the polyphyodont reptilia giving rise to the monophyodont marsupials, and these in turn succeeded by the diphyodont mammalia.

This was a matter of great difficulty, and gave rise to a further question. If the Marsupials have only one set of teeth and the higher mammalia two, which was the super-added set, the milk or the permanent?

As I have said, the Marsupials, Cetacea and Edentates were regarded as monophyodont, but in 1869 Sir William Flower (1) showed that in the nine-banded Armadillo and in one or two other Edentates, of the eighth teeth habitually present on each side of the jaw, all except the most posterior are preceded by milk teeth which are only shed at the time of almost full development of the animal, and consequently had escaped previous observation. From this and other discoveries it is to be seen that the Edentates can no longer be classed as monophyodont.

Before dealing with the Cetacea and Marsupials, I would refer to another point.

Evidence has been brought forward in support of views that two other dentitions are represented amongst the mammalia, a pre-milk and a post-permanent dentition. The evidence in favour of the existence of the latter is, I think, now beyond doubt. Lecke (2) and Kükenthal (3) have observed such traces in the Seal, Röse (4) in Man, M. F. Woodward (5) in *Erinaceus*, and I have noted its existence in the Dog (6).

The evidence in favour of the pre-milk dentition is, however, I think, insufficient. It rests upon the discovery by Lecke (7) of tooth rudiments on the labial side of the functional teeth in certain marsupials. The existence of these rudiments is not disputed; they have been verified by M. F. Woodward (8), in *Myrmecobius*, *Phascogale* and *Dasyurus*, but Lecke's interpretation of these rudiments depends entirely upon the question as to whether the single functional set of teeth in marsupials is in reality the milk set. It is well known that in these animals only one tooth, pm.⁴ is replaced, the deciduous tooth being molariform in character. Kükenthal (9) discovered tooth rudiments on the lingual side of the functional teeth in certain marsupials, which he regarded as representing the successional teeth, and the functional set as corresponding with those known as the milk teeth, consequently Lecke has regarded the rudiments on the labial side of these as representing a pre-milk dentition.

As far as I am aware, there is no instance of four dentitions being present in any one part of the jaw of any animal*, and, as I have shown, there is undoubted evidence

* From abstracts of Professor Lecke's paper, which appear in the *Journal of the Royal Microscopical Society* for February, 1896, it would seem that all four dentitions are present in *Erinaceus*. This is, I believe, an error, as M. F. Woodward (5) has made no mention of the existence of more than three dentitions. Moreover, the interpretation which Lecke first put upon them was that they represented the pre-milk, milk and permanent dentitions; now, however, I believe that he agrees with

of the existence of the representative of a post-permanent dentition. Consequently, since the appearances are the same, I would regard the three dentitions of the marsupials as homologous with the three dentitions of the hedgehog, dog and man. If this be so, then Lecke's pre-milk dentition no longer exists, but what he interprets as such appears as the vestigial remains of the milk dentition, and the functional set as homologous with the permanent dentition, thus once more returning to the view long ago held by Sir Wm. Flower and Mr. Oldfield Thomas.

From what I have said it will be seen that the marsupials are no longer to be regarded as truly monophyodont though the term is sometimes still used, but as indicating that one set of teeth alone is *functional*.

In the Odontoceti, Kükenthal (10) has proved the existence of tooth rudiments on the lingual side of the single functional set of teeth, and interpreting the condition in the same way he regards these whales as having a persistent milk dentition. I should prefer to regard them as representing the permanent set with the post-permanent representatives, the milk teeth having disappeared. From this point of view the whole series are brought into uniformity.

It is interesting to notice that Lecke (11) has recently, if I understand him aright, expressed the same opinion with regard to the dentition of the whales, noting that in other cases of monophyodontism it is the first dentition which disappears, by which, I presume, the milk dentition is intended. I would, therefore, ask upon what grounds are the Marsupials to be excepted? If the teeth of the Odontoceti do not belong to the milk series, then why should those of the Marsupials? The validity of the evidence in favour of the existence of

Woodward in regarding them as the milk, permanent and post-permanent. It is this change of opinion which may have caused the translator to make this statement.

the pre-milk rudiments rests upon a satisfactory answer to this question.

From what has been said, certain conclusions may, I think, be drawn :—

(1) That there is not sufficient evidence to warrant the belief in the existence of a pre-milk dentition.

(2) That the dentitions are tending to disappear from without inwards. This is in agreement with a conclusion of Wiedershiem (13), who adduces facts which indicate that a "gradual reduction of the milk dentition is taking place."

(3) That there is ample evidence in favour of the existence of three dentitions, the deciduous, successional and post-permanent ; thus bringing the mammalia more into line with their polyphyodont reptilian ancestors, and doing away with the former difficulty as to whether the milk or the permanent is the super-added dentition, since both are of equal antiquity handed down from our reptilian progenitors.

Turning next to the molars and first premolar, which, as a rule, are represented in one dentition only, the question arises to which dentition do they belong? Beginning with pm.¹ which is replaced in a few animals only, such as the Indian tapir (14), Hyrax (15), in some cases the rhinoceros (16) and Pig (17) and the extinct Palæotherium (16). In the Dog it is not replaced, and is occasionally absent altogether. In a section through this region in the Dog, three down-growths of the dental lamina are to be seen, and it is from the central one of these that this tooth develops. Now it has been said that the deciduous, permanent and post-permanent dentitions are represented in this animal, consequently I think that the single pm.¹ of the dog is to be regarded as belonging to the permanent series. For the same reason I believe the molar teeth are to be regarded as belonging to the same series. I would here like to refer to a curious point in the dog's dentition. As is well known,

the highly specialised sectorial tooth replaces a tooth molariform in character, a condition somewhat similar to that which I have referred to as occurring in Marsupials. For the same reasons as given above in connection with pm.¹ I regard this deciduous tooth as belonging to the so-called permanent series ; its successor (pm.⁴) developing on the lingual side and quite independently of the tooth which it replaces.

Having thus seen that the mammalia are brought into line with the reptilia as regards the number of the dentitions represented, I will next refer to the views that have been held with regard to the origin of the complex crowns of the cheek teeth from the simple reptilian cone.

First let me refer to the tritubercular theory which is very widely accepted, especially in America. This view was advanced and has been strongly upheld by Professors Cope and Osborne, the latter again putting it forward in an address on the History of the Cusps of the Human Molar Teeth, delivered before the New York Institute of Stomatology, April 19, 1895.*

The evidence in favour of this view is mainly palæontological. Beginning with the simple haplodont cone of the reptiles, the next form is that found in the triassic rocks in *Dromotherium*. Here, in addition to the main cone, there is a minute cusp on both the anterior and posterior slopes. These cusps are said to be of mechanical origin and formed at the point of contact of the teeth of the upper and lower jaws as they interlock. By the increase in size of these two cusps the triconodont form, as found in *Amphilestes* is produced ; here there are three nearly equal sized cusps in the same antero-posterior line. Owing to the wedging action brought about by the closure of the jaws the main central

* This address was reprinted in the *Journal of the British Dental Association* of October 15, 1895, and in the *Dental Record* of the same year.

cuspid, the Protocone of the upper jaw is driven inwards and in the lower jaw, where it is called the Protoconid, is driven outwards, the three cusps forming a triangle with the apex inwards in the upper jaw and outwards in the lower. The anterior of the two cusps at the base of the triangle being called the Paracone in the upper and Paraconid in the lower jaw; the posterior cusp, the Metacone and Metaconid respectively. Such a form of tooth is called a tritubercular tooth and is found in *Spalacotherium*. The remaining cusps are secondarily superadded to these, but it is not necessary to enter into any detail concerning them. Such tritubercular teeth are said to be found among some of the existing insectivora and lemurs.

From this it will be seen that the Protocone and Protoconid represent the primitive reptilian cone. Such being so, we should expect them to develop first in the embryonic history of any tooth, if Ontogeny does recapitulate phylogeny.

In the paper above referred to Professor Osborne admits that it does, for he says "we should expect in the embryonic jaw that the calcification of the tooth germ would be very significant, because we know that the embryonic structures in their development follow the order of addition or evolution." Now this development has already been worked out by Rösé (18) in the Marsupial and Primates, and by Tæcker (19) in the Ungulates with these results. In the lower jaw the Protoconid does develop first. With regard to the Paraconid and Metaconid which should be of equal importance, and secondary only to the Protoconid, the Paraconid develops second in the Marsupials only, while in the Primates and Ungulates it is absent altogether, and the Metaconid in the Marsupials does not develop until after the Hypoconid and Entoconid. Taking these three orders together, even the lower jaw does not lend much support to this view. But in this paper Professor Osborne says, "in the lower molar

teeth " (he is dealing with the Primates only) " the order of calcification is precisely the order of evolution."

It is, however, in the upper jaw that still stronger evidence against this theory is to be found, for in not one of the three orders does the all important Protocone develop first. It is the Paracone in every instance, while in the Ungulates the Metacone also develops before the Protocone. Professor Osborne goes on to say, in speaking of the lower jaw, " so we find the order of embryonic development exactly repeats the order of historical development, and in every way presents the strongest kind of confirmation of the theory of cusp formation." The upper jaw, which presents the most damaging evidence, he dismisses with the single sentence, " but this, you see, is not exactly the case in the upper molars."

I would here like to draw attention to an error in the usual description of the first upper milk molar in the human subject, an error which is of some consequence in its bearing upon this question. In all the books on Human Anatomy that I have consulted, in which a description of the individual milk teeth is given, it is stated that the first upper molar consists of three cusps only, two placed externally and one internally. From such a description one would conclude that we have here a typical tritubercular tooth, a tooth that would in every way fit in with Professor Osborne's views ; but of the specimens that I have had an opportunity of examining, in no single instance do I find such a description to hold good.

If the tooth be removed from the jaw about the time of birth, I think it is possible to recognise eight cusps some of very small size, but leaving these out of consideration, as possibly disappearing with use, I fail to notice two external cusps. There is one main cusp externally with a minute cusp at the anterior end of it, and another at the posterior. This latter is rather bigger in some specimens than in others, but in no way

be compared in size with the main cusp, sufficient to warrant the description given. This point is referred to by M. Topinard (20) in his paper on the "Evolution of the Molars and Pre-molars in the Primates," who likens the external borders of this tooth to a "fleur de lys," and adds that this circumstance has so struck M. Sappey that he describes this tooth as having three external cusps.

Before closing, there is one other theory that must be referred to : it is that known as the multi-tuberculate theory, which was put forward by Dr. Forsyth Major (21) and supported by E. S. Goodrich (22) and others. According to this view the early mammalia were thought to have had teeth possessing many cusps, and that by a gradual suppression of some of these, the teeth of existing mammals have been derived. Two pieces of evidence are in favour of this theory (i.) quite early fossil forms, such as *Tritylodon*, have been found with multi-cuspidate teeth ; and (ii.) that the *Monotremes*, among the most primitive of existing mammals, have teeth of the same description.

With regard to the fossil forms, I think, however, it should be borne in mind that their dental formulæ tend to show, by the absence of the canines and the reduction in the number of incisor teeth, that they were probably highly specialised forms. That some of the mammalia may have been derived from the multituberculata is, I think, possible, but that they have all been, is, I think, highly improbable.

With regard to the origin of the multituberculata from the reptilia, a possible explanation is to be found in Kükenthal's concrescence theory. By this a fusion of several teeth of the same dentition and of different dentitions is supposed to have taken place, causing a reduction in the number of teeth ; the nine cusps in the teeth of *Tritylodon* being due to the fusion of three teeth and of three dentitions. Time does not permit of my entering into the evidence which has been adduced in

favour of these views, I have merely endeavoured to bring before you some of the more important facts concerning the evolution of the mammalian teeth.

May I, in conclusion, once more thank this Society for their great kindness in receiving this paper : and in doing so I would express my great indebtedness to Mr. Charters White whose knowledge and skill in all matters relating to scientific photo-micrography are so well known, for the great trouble he has taken in photographing the sections and preparing them for the lantern. I fear I shall have wearied you with too much detail, but I venture to hope that in placing before you some of the more important views in relation to mammalian tooth genesis, the time spent may not have been altogether unprofitable.

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ORAL SURGERY.

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Eng.

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(Continued from page 300.)

STOMATITIS.

Stomatitis signifies inflammation of the mucous membrane lining the cavity of the mouth. In some cases the submucous tissue is also affected. The inflammation may be more or less limited to the gums (*gingivitis*) or to the tongue (*glossitis*) or may be distributed over more or less of the entire membrane. Stomatitis may be due to many different causes, some local, others general or constitutional.

The inflammatory process may present different features in different cases. It may be catarrhal, phlegmonous, exudative, ulcerative or gangrenous. Very often two or more of these processes occur either simultaneously or consecutively in the same patient, but usually one of them preponderates above the rest. It is best to classify cases of stomatitis according to the nature of the inflammatory process.

CATARRHAL STOMATITIS.

In this condition the mucous membrane becomes congested and serum exudes into the sub-epithelial connective tissue, filters between the epithelial cells and oozes upon the surface. The epithelial cells multiply with abnormal rapidity and secrete an abundance of mucus, which mingles with the serum exuded from the deeper parts to form the characteristic watery and sticky discharge of mucous catarrh.

Catarrhal stomatitis may be secondary to any of the specific fevers such as scarlatina, measles and small-pox, or to any inflammatory affection of the stomach or intestines. It

may be the direct result of any form of irritation such as that produced by rough or carious teeth, food which is too hot, too cold or too highly seasoned, excessive use of alcohol or tobacco, and in children the process of teething, etc. It may also be due to the internal administration of mercury or iodine.

The mouth is usually painful, especially when food is taken. At first it is dry and hot, but afterwards there is an excessive secretion of viscid mucus. Taste is perverted, impaired, or lost. The mucous membrane is red and swollen; the tongue is indented by the teeth and covered with a thick coating of fur, and its papillæ are red and swollen; the gums are swollen and of a deep bluish-red tint, and covered with a greasy secretion; the ridges behind the upper incisor teeth are swollen, reddened and tender. The disease usually runs its course in a few days, but may be more protracted if the exciting cause is allowed to remain.

Treatment. The cause must be discovered and removed. The diet must be limited to fluid or soft solid substances such as milk, soup, eggs, etc., and should be cold or luke-warm. An aperient is usually required.

The mouth should be frequently rinsed with a one or two per cent. solution of Chlorate of Potassium. Children who are too young to rinse the mouth should have it cleansed with cold water after each meal, and then painted over with a solution of borax (grs. 50 ad ʒi) or boracic acid (gr. x ad ʒi).

PHLEGMONOUS STOMATITIS.

In this condition there is diffuse inflammation of the sub-mucous connective tissue of the mouth. Exudation of serum and lymph takes place into the meshes of the connective tissue leading to considerable swelling. The inflammation may undergo resolution, or may proceed to suppuration resulting either in the formation of localized abscesses or a

diffuse purulent infiltration. Septicæmia or pyæmia may ensue.

The most frequent cause is injury, such as that caused by foreign bodies, or by blows forcing the cheek against the teeth; in such cases the wound becomes infected by some of the mouth bacteria. It may also result from extension of erysipelas of the face to the buccal cavity, or it may be secondary to typhoid or scarlet fever.

The disease is attended by considerable febrile disturbance and interference with the functions of the stomach and intestines. Speech and mastication are difficult and painful, and there is an excessive flow of saliva. The affected part is greatly swollen and tender to the touch; at first it feels hard, but subsequently becomes soft and can be indented by the finger. If the mouth can be opened sufficiently, the mucous membrane is seen to be red and swollen, and if there is a wound upon its surface it will look sloughy and unhealthy. Localized softening may indicate the formation of pus which sooner or later becomes discharged into the mouth.

When the tongue is the part affected, it swells rapidly, becoming too large for the mouth, and protrudes between the teeth, or presses against the back of the throat, causing great dyspnoea; sometimes the swelling is limited to one half of the tongue.

Treatment. The swollen parts must be deeply scarified. When the tongue is affected great relief is afforded by making a longitudinal incision on each side of the dorsum. In other respects the treatment resembles that of catarrhal stomatitis.

EXUDATIVE STOMATITIS.

The characteristic feature of this kind of stomatitis is the presence of exudation (usually in the form of vesicles or pustules) upon the surface of the mucous membrane. Such vesicles and pustules may occur in the course of some of the

specific fevers such as small-pox. In diphtheria a croupous exudation may form on the buccal mucous membrane, similar to that found on the pharynx. For an account of these conditions a work on medicine should be consulted.

There are two varieties of exudative stomatitis which require description here, viz. *herpetic* and *aphthous*.

Herpetic vesicles may form on the palate, cheek or tongue, but are commonest on the lips, at the junction of skin and mucous membrane. Herpes labialis often occurs in association with pneumonia, rheumatic fever, influenza, acute nasal catarrh, and other febrile conditions. It may also be caused by local irritation, such as that produced by highly seasoned food, strong tobacco, etc.

The disease may effect either the upper or the lower lip ; sometimes both. It begins as a crop of blisters varying in size from a pin's head to a pea ; they develop very rapidly, and are at first clear and transparent, but after a few days become dim, assuming a greyish-white or greyish-blue colour ; their contents may become purulent. They are usually surrounded by a slight halo of redness. After a few days they shrivel up and form scabs. When the disease affects the mucous membrane the characteristic vesicles are not often seen because the elevated epithelial covering is macerated and shed in a short time, giving rise to superficial excoriations having a yellowish base and red swollen edges.

The treatment consists in administering a mild aperient ; when the vesicles are situated on the skin, they may well be left alone, but when on the mucous membrane they should be cleansed with a solution of borax or boracic acid.

Aphthous stomatitis is characterised by the occurrence of small flat whitish or cream coloured spots or erosions. They may result from the bursting of vesicles, suppuration of mucous follicles, or from small hæmorrhages in the mucous membrane. These spots may occur on any part of the buccal

mucous membrane. They cause considerable pain and great sensitiveness of the mouth in eating, speaking, or smoking. Young children refuse their food and become poorly nourished. The treatment is similar to that of herpetic stomatitis.

ULCERATIVE STOMATITIS.

Ulceration of the mucous membrane of the mouth may occur to a slight extent in the varieties of stomatitis already described. It may also occur in syphilitic and tubercular affections of the mouth; these will be considered separately. In this section three varieties of ulcerative stomatitis will be dealt with, viz., *mercurial*, *scorbutic* and *ideopathic*.

Mercurial Stomatitis results from the absorption of an excessive amount of mercury into the system (see mercurial necrosis). The mucous membrane becomes reddened and inflamed, especially the gum in the region of the lower incisors. The teeth appear lengthened and mastication is painful. The secretion of saliva is greatly increased and the tongue swells so that it may protrude from the mouth. The gums become swollen and spongy and retreat from the necks of the teeth; they bleed readily. The mucous membrane of the cheeks and gum becomes coated with a whitish grey membrane, on removing which deep irregular ulcers are exposed. If the disease persists the ulceration penetrates deeper and deeper until it involves the jaw producing periostitis and necrosis.

The *treatment* consists in removing the source from which the system has become impregnated with mercury. The mouth must be cleansed by washes containing chlorate of potassium or boracic acid. After the acute symptoms have subsided, the ulcers may be painted with tannic acid (grs. 50 ad ʒ1) or with a solution of carbolic acid in tincture of rhatany (grs. 5 ad ʒ1). The elimination of mercury from the system may be hastened by administering small repeated doses of iodide of potassium.

Scorbutic Stomatitis is one of the local manifestations of scurvy. It begins with pain, especially on mastication, and salivation. The gums become swollen and bluish-red, and project over and between the teeth; they are usually more or less ecchymosed, and sooner or later become ulcerated. The ulcers are irregular and covered a dirty brown exudation, they bleed readily and copiously and emit a foetid odour. Similar ulcers may form on the cheeks, tongue and lips. The teeth may become loose and fall out.

The *treatment* consists in alleviating the disease by providing suitable food, especially fresh fruit and vegetables. The local treatment is the same as that of mercurial stomatitis.

Ideopathic Stomatitis occurs chiefly in children especially those who are ill fed, strumous or ricketty, or those who live under unhealthy conditions. It is supposed by some to be contagious. It usually begins acutely by swelling and softening of the gum which becomes covered by a yellowish greasy putrid mass. When this mass is separated an ulcer is exposed spreading along the edge of the gum and bleeding readily. The cheek opposite the interval between the teeth is often affected in the same way. There is always profuse salivation, and the breath is very offensive. Pain may be severe or quite absent. The general health is as a rule not much affected, and fever is slight or absent.

The *treatment* resembles that of the other varieties of stomatitis. Chlorate of Potassium is particularly useful. It should be given in full doses, a child of four years taking 30 grains a day.

GANGRENOUS STOMATITIS.

Gangrenous Stomatitis (noma) occurs in sickly children living amongst unhealthy surroundings and more especially during convalescence from the specific fevers such as measles and scarlet fever.

It usually begins as an ulcer on the inner aspect of the cheek near the angle of the mouth. The cheek becomes swollen, brawny, red and shining. In the middle of the inflamed area there is a livid spot; this soon turns into a black slough, and is surrounded by a purplish mottling; it spreads with great rapidity and often involves the whole side of the face. The inside of the cheek is lined with tough adherent greyish-yellow or soft purplish slough. When the disease starts upon or involves the gums, the latter become red, spongy and ulcerated; the ulceration extends rapidly and is accompanied by the formation of dirty-looking sloughs; the teeth become loosened and fall out, and the jaw is laid bare. The saliva is much increased in quantity and is mingled with blood and pus; the breath is most offensive. There is, as a rule, very little pain and but slight fever; there is marked apathy, and the vital functions are greatly depressed. The disease nearly always leads to a fatal termination, death being due to some form of septic poisoning such as broncho-pneumonia.

The *treatment* must be prompt and energetic. All the affected tissue must be carefully dried and then thoroughly swabbed with fuming nitric acid. The patient's strength must be supported with fluid nourishment, tonics and stimulants.

(To be continued.)

EUCAINE.—Under this name a new substitute for cocaine has been brought out by a Berlin dentist named Kiesel. It is prepared synthetically, and the chemists describe it as "a methyl ester of benzo-yloxypiporidine carboloxylic acid." It is claimed for it that it does not affect the heart, produces more extensive anæsthesia than cocaine, and is non-poisonous. Probably, it will also be much cheaper.

THE ELECTRIC LIGHT AS APPLIED TO OUR HOMES AND WORKSHOPS.*

By Mr. J. I. SHORROCK.

Nothing perhaps has ever had so much expected of it as that science "Electricity." Its present application to our wants is so manifest that it is sufficient to enumerate them, and it is being daily called into acquisition for some new field of labour. It carries our messages, rings our bells, and cures, or rather is said to cure, our diseases. I don't know whether it is the cheap six-pennyworth represented by the telegram, which pitches twenty words per minute to the other end of the kingdom, or, whether it is the machine which shocks the multitude on the piers, or at the fairs, that has led people to believe that the electric fluid can be made to do anything. The story of the Irishman who put a pair of boots on the telegraph wires in the hope that they would travel to their destination without further trouble is an illustration of this widespread belief. Among other tasks for the coming race is the long cherished idea that it will ultimately light all our houses and streets. And what a fuss it has created too. There was none of this fuss when gas was first introduced. On the contrary it had no friends. The idea of bringing a nasty, poisonous gas into our houses, to blow everybody up that it did not stifle, was too ludicrous to be seriously entertained; but gas was introduced, and to such an extent that one company now gathers a yearly rental of no less than £370,000 in the city of London alone. So the popular voice was wrong in the case of gas.

Electric light was first obtained by Volta, and was for some time called the Voltaic Light. The phenomena was first discovered at the beginning of the present century by

* Read before the Students' Society of Victoria Dental Hospital.

Sir Humphrey, then, Mr. Davy, but this was again improved by Faraday, and his discoveries have in fact made the electric light what it is. Time will not permit this evening to go into all the discoveries made from the beginning of the present century. I will simply enumerate them. Firstly then, Volta obtained the Electric Fluid. Sir Humphrey Davy discovered the light, Faraday improved upon it and found the communication between magnetism and electricity ; improvements were then made by Rhumkorff, Clarke, Pixii, Nollitt, Siemens, in 1854, Wilde of Manchester, Ladd and many others. According to Hammond, one of the best collections of magneto machines ever brought together was that exhibited in 1876 at the Loan Exhibition of scientific instruments at South Kensington. Here was to be seen a curious old machine invented by Leopold Nobilii and Vincenzo Antinosi which may be said to be the first machine by which a magnetic spark was produced. Here also was a copy of the original apparatus made by Saxton and exhibited by him before the British Association in 1833. During the past few years a greatly increasing amount of attention has been given to the subject of lighting by electricity, and the desire for more more intimate knowledge of the laws which this phenomenon involved, and the modes of applying electric energy cheaply to the lighting of our houses is rapidly extending. Hitherto those who have written or spoken upon the subject have treated it under its scientific, rather than its social, aspect, describing the various improvements in the inventions relating to the supply and distribution of electricity without dwelling upon the highly domestic side of the question. It shall, therefore, be my endeavour this evening to avoid scientific terms as far as possible and to deal with the subject from its social side. Before going further, allow me to say that many facts in this paper have been taken from an excellent book on the subject in question by Mr. Hammond.

It has been claimed by more than one writer that the measure of advance in the civilization of a nation may be known by the mode of illumination which is generally adopted by it. And when one considers the very varied means of lighting at present in use in different parts of the world one has very good ground for believing the assertion to be correct. When the shadows of evening fall upon the Nevada Canons the Red Indian still sits in the glow of his camp-fire as his fathers did ages ago. The Greenlander has for his only means of lighting, the oil from the blubber of the whale. In some parts of Europe there may be seen the Etruscan lamp of two thousand years ago. To those who are accustomed to notice all the many strides which have been made during the past twenty years in the mode of production, distribution and consumption of coal gas, it may seem absurd to liken gaslight in any way to the blubber oil light of the Esquimo, but one sweeping indictment can be brought against all kinds which are in use in the world at the present time, for they have in common one serious fault, a fault which cannot be eradicated by any improvement, and which in the case of many absolutely condemns their use for indoor purposes. I allude, as may be imagined, to the fact that they extract a greater or lesser amount of oxygen from the air. I hope it will not be thought that I have forgotten my promise to avoid approaching the subject purely from its scientific side when I make reference to the chemical constituents of the ordinary coal-gas we are accustomed to use for lighting purposes which constituents may be stated as follows :

| | | | |
|---------------------|-----------------------|-----|-------|
| H. | ... | ... | 47.60 |
| C H ₄ | (Marsh Gas) | ... | 41.51 |
| CN H ₂ N | (Heavy Hydro Carbons) | | 3.05 |
| Co. | Carbonic Oxide | ... | 7.82 |

When the gas tap is turned on, those ingredients in the

form of gas immediately rush into the room, but they do not chemically combine with the oxygen in the atmosphere until the air above the gas pipe is warmed by a lighted taper to the pitch necessary for the chemical union of hydrogen and oxygen; when, however, a requisite amount of heat is applied, the hydrogen in the coal gas combines at once with the oxygen contained in the fresh air in the room and the compound so formed is water, which is deposited in the walls, ceilings, furniture, carpets, &c.

By the union of the hydrogen and oxygen particles of carbon are raised to white heat and are thereby enabled to give out light. In the process of being raised to, and whilst at this high temperature the bulk of the particles of carbon take effect as it were upon the remaining oxygen contained in the room forming in conjunction with it a gas known as carbonic acid. A certain number of carbon particles, however, pass without combining with the oxygen and these have a very unpleasant habit of settling down in a form to which ladies have so great a dislike, that of smuts. Now it will be seen that the particles of hydrogen as well as the bulk of the particles of carbon in coal gas only act in the production of light by the consumption of oxygen, and when I remind you that the gas substance formed by the chemical combination of carbon particles in the gas with the oxygen in the air consists of nearly three parts by weight of oxygen and one of carbon, you will readily see how large an amount of oxygen is extracted from the air as long as the gas jet is burning, whilst the constant extraction of oxygen from the air, and the production of carbonic acid are irreparable faults. I have therefore to ask you to join me in considering what a perfect light should be. We may begin by saying that the perfect light for our homes should fulfil the following conditions: Firstly, it should not rob the air of our rooms of oxygen; secondly, nor add noxious fumes to the air; thirdly,

nor be a source of danger in the house ; fourthly, nor be an unpleasant light ; fifthly, nor be difficult to control : sixthly, nor be costly. These conditions you will notice are those demanded by a perfect light, and though almost everything with which we are familiar in this life falls short of perfection, I hope before we have finished to show you a light closely fulfilling the requirements specified.

If I take a piece of copper wire and pass a current through, if the said current is strong enough, it will begin to get red hot. If I increase the strength of the current the wire will melt. As is known to all, however, this is due to the oxygen in the surrounding air, *i.e.*, by its oxidation. It is necessary therefore, if we wish to guard against this destruction, to take means first to banish from it the oxygen of the air, and secondly to use such a material as will stand no chance of being disintegrated by the high temperature to which it is raised during the passage of the current through it. Taking first the question of a suitable material, one is glad to be able to state that the early inventors of the incandescent electric light confronted with the difficulty, worked upon it for many years, and did not leave it without practically solving it.

Many substances are evidently better than copper for use as thin filaments, because when drawn very fine it can be easily melted. Platinum on the contrary has a very high fusing point, and as far back as 1871 incandescent platinum was used.

Iridium and its alloys were also tried, but all substances at last gave way before carbon, as the following table will show.

| <i>Inventor</i> | <i>Date.</i> | <i>Substance.</i> |
|-----------------|--------------|-------------------|
| Moleyns. | 1841. | Platinum. |
| Starr. | 1845. | Carbon. |
| Greener. | 1946. | Carbon. |
| Petrie. | 1849. | Iridium. |

| <i>Inventor.</i> | <i>Date.</i> | <i>Substance.</i> |
|------------------|-----------------|-------------------|
| Lodyguine | 1873. | Carbon. |
| Konn. | 1875. | " |
| Lane-Fox. | dates disputed. | " |
| Swan. | " | " |
| Edison. | " | " |
| Maxim. | " | " |

It is known that all substances may exist in one of three forms :—the solid, the liquid, and the gaseous. But of the substance in question (carbon) it has been said that its passage from solid to gaseous is so rapid that it apparently omits the liquid stage. Some indeed declare it to be impossible.

Having then in the end obtained a filament which, for all practical purposes, will not disintegrate by the passage of the electric current through it, there now only remains for us to examine the mode by which oxygen can be prevented from coming into contact with it, in such a way that, when raised to white heat, it will not oxidise, or, in other words, burn and turn into carbonic acid.

It seems self-evident that if by any means it could be made to become white hot inside a glass bulb *from which all air is excluded*, i.e., a perfect vacuum, the problem would be completely solved.

When the early inventors were working upon the electric lamp, the difficulties of creating a high vacuum were apparently insurmountable ; but those familiar with Professor Crookes's Radiometer are aware that these difficulties have been completely conquered, and at the present time almost a perfect vacuum is obtainable.

You have already seen, in reference to the second hermetically sealed tube through which we passed the electric current, that the exhaust-pump had been brought into play upon the particles of air contained within it, and had only

left *one* particle in *one thousand*, and I am now able to state that by means of a very delicate piece of apparatus, the particles of air have been so thoroughly exhausted from this little "Hammond Company" Lamp that only *one* particle *per four millions* is supposed to remain therein.

Since air consists of one-fifth oxygen and four-fifths nitrogen, it naturally follows that by the abstraction from the bulb of these millions of millions of particles of air, the oxygen has almost entirely disappeared, and you will therefore have a right to expect that when the electric current is passed through the carbon filament which is sealed up within it, the filament will not only refuse to melt on account of its having so high a fusing-point, but will also not burn up, *i.e.*, oxidise, in consequence of the almost entire absence of oxygen from the interior of the bulb.

I am careful, you will notice, to say *almost* entire absence of oxygen, because we must admit that however perfect the exhaustion of the lamp may be, we have not, nor is it possible that we shall ever arrive at, a perfect vacuum, since an absolutely perfect vacuum can only be obtained by the abstraction of every single one of the billions of particles of air which are present when the process of exhaustion is first started.

To practically prove, however, whether our conclusions are correct, let us attach the finished lamp to this standard, and you see that the moment the attachment is made, and the electric current passed through the carbon filament, or conductor, inside the lamp we get a most beautiful light without any indication of cessation.

It would of course be a fair corollary to this experiment to ask you to wait to see how long the filament lasts without giving way ; but as I feel confident that it will stand at least three hundred nights, one fears that you would not care to accept the invitation.

I am now going to try to prove to you that the light so obtained is nearly a perfect light. We must proceed to test it by the conditions laid down, and decide whether it fulfils any or all of them and so refer to these conditions. No. 1. There can be no doubt the electric light which is here produced exactly complies with these conditions, for if oxygen could be admitted for only one second by the carbon filament it would burn up, in fact in this light we have identically the reverse of the chemical phenomena which is exhibited by all the other forms of light, they indeed require oxygen while the electric light depends upon its entire absence. How charming then for our home use, for use in our hotels, theatres, public halls, churches, railway trains. The headache which is a foregone conclusion of assembling ourselves together, and which is generally produced by the scarcity of oxygen in the air will be known no more, ladies whose endeavour has been, for one hardly likes to say how many dozens of years, to look their best when their husbands return from their daily toil, will not in future be made pallid by the absorption of this necessary element from the air.

Let us think of the opposite effect which is produced by six gaslights in an ordinary room, each light producing a more disastrous effect on the atmosphere than five human beings; secondly, I may refer you with complete confidence to this little lamp for it is closed in and no air can enter. There is no place from which noxious fumes can escape, the only effect is the radiation of a certain amount of heat which is calculated to equal one-twentieth of that generated by the gas jet of the same illuminating power. There are some who actually object to the electric light on account of the small amount of heat it generates.

Thirdly. The perfect light should not be dangerous. The gas industry has been fully developed for more than fifty years, we still hear almost daily of serious and sad accidents,

but in spite of the constant regularity of these accidents, the public pay absolutely no attention to them, and the press satisfies itself with very meagre reports of calamities which have ceased to be novelties. Still there are present everywhere active and intelligent men ready to condemn the electric light and to magnify the dangers arising from it. It is a popular notion but nevertheless a false one that death or serious injury must inevitably follow from touching the wire conveying the electric current.

You will notice that, though the copper conductors are uncovered, and though there is no insulating material in my hand, I am able to grasp the two conductors with impunity, nor do I feel any unpleasant sensation whatever from the contact.

These two batteries are, however, capable of producing a very feeble current. Speaking technically, it has only an electro-motive force of 4 volts, and a volume of 25 amperes total, 100 volt amperes. It may interest you, therefore, to know that one may grasp, as I have done with equal impunity, the terminals of a very large dynamo machine, yielding an electro-motive force of 100 volts, and a current of 650 amperes-total, 65,000 volt amperes.

Yet on the other hand, you are doubtless familiar with the details of the sad accident that occurred at Lord Salisbury's, where a gardener lost his life by taking hold of the two wires leading to and from the dynamo electric machine.

What is there distinguishing the two cases? Simply the *tension*, or what we will call the "pressure," of the electricity used on each occasion. The current which proved fatal to Lord Salisbury's gardener, was that which was in use for arc lighting purposes, and *was of high tension*, again speaking technically, it had an electro-motive force of 800 volts; whereas the current required for the incandescent lamps, proposed to be used in our homes, is a *low-tension* current,

like the one flowing in the conductors which I am grasping, and from the *alternating current* dynamo machine, whose terminals I grasped, without feeling any ill effects.

We dispose, therefore, of the question of (1) *danger to life* by declaring most emphatically that—

(a) *The only current at the present time suitable for incandescent lamps is one which can be of no danger to human life.*

Your attention, however, must be drawn to the fact that the wires which were touched by Lord Salisbury's gardener and also those which I am now touching, have no insulating material round them ; and, though it has been demonstrated to you that no possible danger can arise from touching those particular naked wires, because they are carrying a low tension current, yet, as a matter of fact, all the wires conveying the electric current into our houses and into our rooms will be covered with some insulating material, cotton, silk, india-rubber, asbestos, bitumen, gutta-percha, &c.

In residences the main wires running up through the house are heavily covered by a thin outer material of a similar colour to the walls. In the rooms, the thin wires leading from the larger mains are covered with silk of a colour to match the decorations, so that on this head one is able to say that—

(b) *Even if the wire did convey a current dangerous to human life, it would not be possible for any one in the house to be affected by it ; because all the wires will be carefully covered by an insulating material.*

From the consideration of the question of *danger to life* we pass on to the other latent danger which is supposed to lurk in electric lighting, that of (2) *danger of fire*.

You will remember that at an earlier period of the evening you saw how easy it was, by passing the electric current through a wire too small for it, to make the wire red hot. If

that wire had been hidden away under a cornice, or embedded in a wall, the danger to surrounding woodwork is apparent ; but the electric current and its conductors are so capable of easy manipulation, that this danger can be absolutely guarded against.

This may be illustrated by a small experiment.

This conductor consists at each end of copper, but in the centre there is a piece of lead.

Now, lead not only has a higher resistance, but has also a much lower fusing-point than copper, and, therefore, a particular size of lead is far less able to withstand melting, by a given electric current, than the same size of copper ; so that if the piece of lead inserted in the conductor be made of exactly that size which will break at the moment when an excessive amount of current, sufficient to heat the conductor, be passed through it, the immediate breakage of the lead will prevent the excess current from passing further and making hot the portion of the conductor which is beyond it.

Pray understand that under a proper electric light system this irregularity is not likely to arise ; but to completely rob it of any danger, all we have to do is to take care that, at the entrance to every dwelling, where the house mains or conductors of the electric current join on to the main in the street, and again at the junction of the conductors through the house with those in the separate rooms, little safety-joints of lead or other suitable metal, in a handy form, be placed, care only being taken that they are of sufficient weakness to break immediately, and so stop the further passage of the electric current into the house or into the separate rooms, in case an excess current, sufficient to make the mains or conductors hot, should, by any mischance, be generated.

The only thing that can occur in electrically-lighted houses is the overheating of the wires, which overheating, we have seen, would certainly be completely guarded against.

Having therefore shown you that there is (1) *no danger to life*, and (2) *no danger of fire* in the use of the electric light, I consider that my task under this head is accomplished. But before leaving the subject of danger, I may also urge that there is (3) *no danger to health*.

This point has been pretty fully dealt with under the head of the non-abstraction of the oxygen of the air, and the non-vitiation of the atmosphere ; but I may illustrate the absence of another danger by a short anecdote.

A friend of mine whom I have missed from my club for a long period, accosted me a few days ago, and on my expressing surprise at the time that had elapsed since I last saw him, he told me that he had been a sufferer for many months from a disease which his doctors had all failed to trace to its right source.

He felt greatly debilitated at home, and was constantly urged to try the effect of a change of air. Whenever he went away his health was restored ; but, when he returned, ill health again attacked him. His physician questioned him very closely as to the state of the drains in his house, and he had them thoroughly overhauled and declared perfect. At last, at the close of one of his calls upon his physician, that gentleman insisted upon going to examine my friend's house himself, and after failing to discover any clue to the cause of his illness in any other part, he went into his bedroom, where he immediately detected an escape of gas, which had become so familiar to my friend that he had not noticed it. This escape of gas was found to occur a few inches from the bedside, and whenever he returned home, he had unconsciously, night after night, been inhaling a poison. This leak having been stopped, his health was restored, and he is now as strong as any gentleman in this audience. I need, perhaps, hardly say that the electric light *does not leak*, and that from its use such a case as this could not arise.

Fourthly. The perfect light must not be an unpleasant light.

Let me afford you a slight illustration of what can be done with the electric light where weak eyes are to be considered. There is fixed to the reading-stand before me, an incandescent lamp of low resistance, giving a very bright light, and I see some in the front row who are gazing steadily at it, blinking their eyes. This is, however, the usual result of looking at any bright light. In gazing directly at this one, you are, of course, acting in an exceptional manner; for one has yet to meet the man engrossed with professional business or political cares during the day, or the lady with her multifarious occupations, who spends the evening hours in gazing at the light which illuminates the room. But if by chance, an occasional glance should be directed towards this bright lamp, and such a glance should affect the eye unfavourably, let me show you how easily it can be removed.

We take this creamy-white globe, which you will notice is not open at the top like a gas-shade, because we are able to make our outer globes, when their use is considered necessary, of a pretty oval form. With the reading lamp covered in this manner, how nicely moderated the light becomes.

“Ah!” says one, “but I don’t like white light in any form. I have an intense yearning for the beautiful, and would prefer a peacock-blue to the purest white you could show me.”

Well, here is a globe of that colour, and when it is fixed on the lamp-stand, which you will notice can, as far as the wires covered with silk will allow, be moved from table to table with ease, we have a “thing of beauty,” which the closest adherents of that gentleman who was disappointed in the Atlantic, and thought Niagara a vastly overrated performance, would desire to look upon. In fact, one could imagine a disciple of his spending hours in the contemplation of this

charming light, varied only by an occasional sniff at a lily, or a sigh over a sunflower.

Enough, however, has been said to show that the electric light can be so arranged as to prevent it affecting the eyes unfavourably, for it can be manipulated and moderated to any extent that may be required.

Fifthly. The perfect light must be under perfect control. This point I think can be soon finished with. I will pass a number of switches round, and I think you will all see how perfect the control is. There is no fear of the switches leaking as in the case of a gas tap.

[After thoroughly and practically explaining the working of a switch, Mr. Shorrocks continued.]

As you have followed me so closely I think I may take it for granted that you have considered that I have proved most conclusively the desirability of your using the electric light, and in looking round my audience I think I can vouch that everyone will have it fitted up immediately. With regard to the question of cost, I will merely say that much has been reckoned and the opponents of the new light have pointed out triumphantly how expensive has been up to the present time its application. We must ask them however, to bear in mind that in many cases no attempt has been made to grapple with the question of cost upon a sufficiently broad basis for up to the present time the electric current has been generated on an absurdly retail scale.

Of what weight then can be the argument that six electric lights running from an engine in the back yard cost more to illuminate a lecture hall than gas which formerly lighted it? Or that a hundred incandescent lamps in a draper's shop, the current from which is obtained from a dynamo machine working on the premises costs very much more than one hundred gas jets which were fed from a central supply in the town where gas was being manufactured in sufficient quantity to

supply fifty thousand lights. A gentleman once said to me, are you prepared to light five street lamps with electricity from a dynamo at the end of a street at the same price as what the corporation are now charging for gas, to which I replied yes, I am prepared to supply these five lights at the same price as that which the corporation charge for gas provided that the company allow me to light the rest of the town by the supply of which they are enabled to keep the cost of the 5 lights so low. The leading point connected with electricity is raised in this question and necessary comparisons are constantly being made between the cost of electricity manufactured on the consumer's premises with the cost of a number of gas jets forming only a trifling part of a gigantic system.

My task is done, and I have to thank you for the very kind attention which you have granted me, and I hope I have succeeded in giving you a warm appreciation of the electric light.

If my arguments have had weight with you, I look forward to the time when the Victoria Dental Hospital will be lit throughout by the light, and we long-suffering students will not have to perform gymnastic exercises to extract a lower sixth year.

If my hopes in this respect be realised, I shall look back with redoubled satisfaction when I had the pleasure of bringing before you the advantages of the electric light in our homes and workshops.

THE LITERARY PHASE OF DENTISTRY.—A training in dental literary work which has had its inception along with elementary training in dentistry, and where the two are developed *pari passu*, would, if generally adopted, soon lay the foundation for a thoroughness and accuracy in the future literature of our profession which has been sadly lacking heretofore.—*The Dental Cosmos*.

British Journal of Dental Science.

LONDON, MAY 15, 1896.

EDWARD JENNER.

On May 14th, 1796, JENNER performed his first vaccination. It is thus a fitting time to celebrate the centenary of this most remarkable event by a short notice of the man and his work. EDWARD JENNER, the author of the most important discovery ever made in medicine, was born in Berkeley, near Gloucester, in 1749. Except for a short while when he practised in London, he was a country doctor, first as a general practitioner and afterwards solely as a physician. As a youth he was less fond of book learning than of learning in the "book who runs may read." The knowledge of Nature and of living things was his great delight, and this pursuit was encouraged and intensified by his being brought in contact with JOHN HUNTER, who was then on the Staff of St. George's Hospital, and whose pupil he became, living under his roof for two years. Letters are extant from the great Surgeon to JENNER requesting him to supply him with hedgehogs, eels, porpoises, salmon spawn, etc., for the experiments he was always conducting, and there is no doubt his great master's precept, "Why think only? Why not try the experiment?" bore fruit, in his great discovery. One day a young woman came to his surgery to seek advice, and upon small-pox being spoken of in her hearing, she remarked, "I cannot take it, for I have had cow-pox." This was the first time that JENNER had heard this statement, which seems to have been common knowledge among the country folk at that time, and it sank deeply into his mind. In fact he became such a bore to his friends, medical and otherwise, by continually harping upon this string, that his fellow-members of the Medico-Convivial

Society at Rodborough (JENNER was a good musician, could take his part in a catch or glee, and was no bad hand at the flute and violin) threatened—whether in jest or earnest is not known—to expel him.

But the question “Why not try the experiment?” would not let him rest, and at last the opportunity came. A farm servant who had been infected by her master’s cows, had the matter taken from her hand and inserted into the arms of a healthy lad about eight years old. The symptoms familiar to us all followed. Six weeks afterwards the boy was inoculated with matter from small-pox pustules, and no ill effects followed. This was the first successful vaccination, and after further experiments JENNER published two years later his observations in a small work, “An Inquiry into the Cause and Effects of the Variolæ Vaccinæ.” This small book created a wonderful sensation, and the new method of combating the dread disease soon spread all over the world. Parliament voted him £10,000, and later on a further grant of £20,000, in acknowledgment of his disinterested labours. If he had chosen to keep his discovery a secret (no great crime a hundred years ago) he might have amassed a princely fortune. But on the contrary, he freely gave to all who asked, and his time was so engaged in procuring and distributing the vaccine lymph, that his practice suffered considerably. Honours poured in upon him from all sides. The list of honorary degrees and diplomas conferred upon him extends to six pages of small print in his Biography. Medals were struck in his honour, and poets sang his praises. NAPOLEON, at his request, released two prisoners, with the remark, “It is impossible to refuse anything to that man,” while a letter from JENNER served as a passport on the Continent at a time when all Europe was at war. He died full of years and honour on the 26th of January, 1823, and was buried in the village church at Berkeley, his family having declined the offer of a grave for him in Westminster Abbey. He is described as being of rather under middle size; his person robust, active and well-formed. In dress he was peculiarly neat, it con-

sisting of a "blue coat and yellow buttons, buckskins, well-polished jockey boots with handsome silver spurs, and he carried a smart whip with a silver handle. His hair was done up in a club, and he wore a broad-brimmed hat." Quite a dandy.

JENNER was not without his detractors then, any more than he is now, while PASTEUR who has followed so closely in JENNER's footsteps, is regarded in just the same light. The manner in which JENNER met this detraction and calumny is graphically described in a letter he wrote to a friend, "I know very well the opinion of the wise and great upon it, and the foolish and the little I don't care a straw for." It is a curious coincidence that the present lamentable outbreak of small-pox in Gloucester should take place at the very time when many nations (Germany, Russia, and the United States, not England alas! a prophet not being without honour save in his own country) are preparing to celebrate the centenary of JENNER's discovery, and it seems like the irony of fate that the outbreak should be raging in his county, a few miles from the spot where he performed his first experiment. Calmly, we might almost say pityingly, his statue looks down from its pedestal in Gloucester Cathedral upon the people who have after so many years forgotten little and learned little; as CARLYLE says, "mostly fools."

A DENTAL HOSPITAL FOR NOTTINGHAM.—We notice that a correspondence is appearing in the columns of the *Nottingham Daily Guardian* concerning the proposed institution of a Free Dental Hospital. The scheme has been mooted by "L.D.S. Eng," who, quoting the examples of London, Liverpool, Birmingham, &c. : sees no reason why Nottingham should be behind-hand in the movement, as there are "So many thousands of people to whom such treatment would be beneficial and acceptable." We are glad to see

the suggestion is being responded to, and as the estimate for inaugurating the Hospital is the somewhat modest one of sixty pounds, we feel sure that this will soon be forthcoming, in an enterprising town containing nearly a quarter of a million inhabitants. While wishing "L.D.S. Eng." and his helpers all success in this movement, and while hoping the proposed Institution will not only be a stronghold of conservative dentistry, but in course of time another centre of instruction for our rising dentists, we cannot refrain from warning our friends at Nottingham to beware of allowing its benefits to be abused to the detriment of established reputable practitioners.

AN ANCIENT FALSE TOOTH?—According to the *Galveston News*, a skull found in Texas in a gravel pit under four feet of gravel and five of loam must either be responsible for upsetting geological theories, or else modern methods of filling teeth and setting artificial ones must have been acquired by the early Texas cave-dweller. We are rather inclined to think that if the full history of this skull were forthcoming it would bear a remarkable resemblance to that spoken of by the American bard, in which a skull presumably of Antediluvian date was found at the bottom of some old excavations. Unfortunately for the Antediluvian theory the skull speaks and informs its hearer that its name was Brown and its "crust was busted, falling down a mine in Calaveras County."

DENTISTRY FOR HORSES.—We are indebted to *Invention* for the following particulars:—Not only in the human race but among horses as well, dentistry is becoming a recognised science, and has attained a high degree of efficiency. In many of the great stables a horse dentist is constantly employed. Once every year or oftener, the teeth of the horses are carefully examined and placed in proper condition.

The most common defect in horses' mouth is that of sharp teeth, where the teeth are worn unevenly, leaving a sharp edge on the outside, which irritates the inside of the cheek and prevents proper mastication. The sharp edges are filed down with a rasp made for the purpose. Should an animal from any cause lose a tooth, the opposite grinder gradually becomes longer until in time it amounts to a serious inconvenience. For these long teeth is a specially devised instrument which cuts it off smoothly and easily without apparent pain to the animal. A horse's tooth is a more solid structure than the human, and the sensitive pulp cavity does not come so near to the top. Sometimes, but not often, it is necessary to extract a tooth.

NEWSPAPER SCIENCE.—“Newspaper Science” is proverbial for its incorrectness. What shall we say of the following statement which occurs in a contemporary this month—“There are in London and elsewhere several dentists who earn their living by making sets of false teeth for dogs.” One is forcibly reminded of the alleged relationship between falsehoods and statistics.

AN INTERESTING FIND.—A couple of teeth found at Tanbach, near Weimar, are, says *Nature*, claimed to be the oldest human teeth yet found in Europe. One is a milk molar, and the other a permanent first molar of the left lower jaw. The grooves in the latter tooth show a striking resemblance to one of the chimpanzee, but not so much to those of the gorilla or ourang. Attention is called to the fact that certain of the molars in civilized man are reduced in size from those of early man, just as has been shown to happen with domesticated dogs descended from wild dogs.

A NEW USE FOR ARTIFICIAL TEETH.—The motives which induce people to purchase artificial teeth are various. Perhaps vanity, or, let us say, the æsthetic faculty comes first.

Next in importance is the desire to promote digestion, and therefore health, not perhaps always unconnected with a wish to do justice to the good things of the table, apart from any high physiological standpoint. Thirdly, in members of the dramatic, musical and clerical professions, and, in fact, all those whose special care is (or ought to be) to enunciate distinctly, artificial teeth are sought as a means to this end. But in the case of the ticket-of-leave man, all these motives sink into insignificance beside the all-important one of how to deceive his natural enemy, the police. Our Anthropometric system may not be as perfect as the French, with regard to criminals, but any peculiarity, such as the absence of front teeth is carefully noted. Hence the anxiety of the criminal to possess himself of artificial teeth, and so to alter as much as possible the description which he knows has been duly entered against his name, and perhaps has been circulated to every police station in the kingdom.

THE LATE FATAL CASE UNDER CHLOROFORM.—On another page will be found a report of the trial for manslaughter of an unqualified dentist. He administered chloroform unaided to a servant girl who died under its influence. We have so recently written upon the imprudence of employing chloroform in dental operations even at the hands of skilled anæsthetists that we have nothing more to say. We have been much struck with the general ignorance of otherwise well informed persons, in conversation, of the fact that the present state of the law allows any person to administer anæsthetics to any other person. But such is the case, and the remarks of the learned judge at the recent trial bear out our contention. The prisoner has been discharged; *the jury thought the indictment too hard*. Can it be possible that the rest of the population of this country are of the same opinion? If not, then surely some alteration in the law may be expected; but we are sadly afraid that such cases are soon forgotten and that the time is "not yet."

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

Ordinary Monthly Meeting, March 2, 1896.

Mr. David Hepburn, L.D.S. Eng., President, in the chair.

The Minutes of the preceding meeting were read and confirmed.

The following gentlemen having signed the necessary obligation forms, were admitted members of the Society :— Ernest Catt, 12, Valley Bridge, Scarborough ; W. Fryer Cornelius, Orchard Gardens, Teignmouth ; E. L. Dudley, 14, The Circus, Bath.

The following gentleman was duly elected a member of the Society :—Harold Dewe Mathews, L.D.S. Eng., Grove Field Villa, Cheltenham.

The following gentleman having signed the obligation book, was admitted a member of the Society :—Walter S. Nowell, M.A. Oxon., L.D.S. Eng., 41, Wimpole Street, W.

The Librarian reported the receipt of the usual periodicals, also of the *Journal of the Bristol Medical and Chirurgical Society* for 1895.

The Curator : I have to present to the Society, for its museum, a model from Mr. Beadnell Gill, showing three upper temporary laterals, two on the left side and one on the right. It is a very interesting specimen, since irregularities of any kind amongst temporary teeth are so much rarer than amongst permanent ones.

In response to the appeal made some time ago, six old pieces have been sent to me, some of them containing natural teeth mounted on bone, and others containing porcelain teeth similarly mounted. Unfortunately, they arrived whilst I was ill last autumn and the name of the donor has been lost ; if he will be good enough to communicate with me I shall have great pleasure in seeing that his name is attached to the specimens.

A third specimen has been sent by Mr. Vacey Linnington Hope, and is part of the left half of the mandible of a cave bear containing a canine and a lower molar ; the specimen was found in the Riviera under fifty feet of stalactytic limestone. From the same neighbourhood, two or three years ago, three very interesting skeletons were discovered in a nearly similar situation, one of a man and two of women, and

were described by Professor Jennings. Very great interest attached to these skeletons because the man was over 7 feet 4 in., and the women 6 feet 4 in. and 6 feet 6 in. in height. Of course these specimens all date from times so remote that they must go back many hundreds of thousands of years ago.

Dr. WALLACE said he had very much pleasure in presenting half of the skull of a female tapir to the museum. It was only half a skull, but it was all he had got, and he hoped the Society would accept it on the principle that "half a loaf was better than no bread."

Mr. STORER BENNETT: I have, sir, to bring to your notice a case which illustrates the dangers that sometimes attend the injudicious use of elastic bands, in attempting to move teeth from one position to another. In this case, a young lady, about 13 years of age, was under my treatment for retraction of the upper teeth, in consequence of great superior protrusion. Unfortunately, her health being very bad, every now and then the apparatus she is using is thrown on one side altogether. In the beginning of last July it was arranged to take her to the seaside for three or four months. I therefore decided, as I was attempting to draw back the upper canines, to cement on two collars to the first molars and canines on each side, and connect them by elastic bands.

The first model shown on the screen illustrates the case before I commenced the treatment. The next shows the result. The gold collars have tilted forwards the first molars on each side, and the canines drawn back to the second bicuspsids, have unfortunately also become considerably rotated outwards. The bands which ought to have been attached to the palatine side of the collars were entirely neglected by the patient, with the result that traction was only made on the outer side and hence the rotation.

The points I wish to accentuate are, firstly, the danger of leaving patients to look after regulation cases for themselves, though as in this instance, the risk had to be run; and, secondly, the very curious effect produced on such large teeth as the first molars in tilting them forwards.

Seeing that we were going to have the subject of evolution before us this evening I thought it might be interesting to members to see two models which I took some years ago from the mouth of a lady, age 33. There are in the upper jaw two permanent centrals and one molar, with three temporary teeth; and in the lower, a right lateral and canine

and five milk teeth. The five permanent teeth mentioned being the only members of the second dentition ever erupted. This case is the more interesting from the fact that I am informed her sister has a very similar dentition.

The next slide is a photograph of the skull of a white-nosed monkey, showing an appearance which bears somewhat on the last specimen, being a case of suppression of the upper incisors. The skull is almost an adult one, the canines being nearly erupted, but there are no permanent incisors, and the alveolar ridge is so thin and small as to convince one that the teeth are not present in the jaw at all. There are, however, two temporary laterals. Irregularities of dentition amongst the lower animals, of course, are rare, but as far as my experience goes they are not as rare as people generally imagine.

The last slide I wish to show represents the skull of a monkey with only one upper central incisor occupying the median line. Whether the other was ever developed and lost as the result of accident, or whether it has been suppressed, the appearance of the specimen hardly justifies one in definitely stating. I have much pleasure in presenting these two skulls to the Society's Museum.

Mr. J. F. COLYER: Mr. Bennett said he extracted the molars as shown in the second illustration, but he did not explain the reason why.

Mr. STORER BENNETT: I took them out because they were very much decayed, and there was no possibility of getting the front teeth back sufficiently without. It is one of the very worst cases of superior protrusion I ever had to deal with.

Mr. SIDNEY SPOKES asked whether in the case of the patient referred to there were any other signs of suppression in the dermal appendages; whether her hair was luxurious or the opposite.

Mr. REINHARDT mentioned the case of a lady, age 26, who had only five teeth in both jaws. He saw her some time ago, and did not remember distinctly which they were, but there were only two permanent teeth among the five. She had a luxurious crop of hair and her nails were all right.

Mr. STORER BENNETT said there was nothing remarkable in the case about the dermal appendages, the hair was neither specially thick nor at all scanty. There was nothing at all abnormal excepting the teeth.

Mr. CHARTERS WHITE said a case was brought before the

Society some years ago, in which a similar abnormality in the teeth was associated with a profusion of hair all over the face.

The PRESIDENT said he remembered the case, and also a very marked instance brought forward by Mr. Oakley Coles, of a Russian family, known as "the hairy people," whose faces were entirely covered with hair. One of the family, a child, age 7, had some three or four central incisors, while the father had never erupted more than some four or five rudimentary sort of teeth in the front of the mouth. He believed there were other instances on record where this peculiarity had been associated with an abnormal development of hair.

Mr. BLAIN exhibited specimens of Dr. Martin's "Prothese Immediat." They were made, he said, for the superior and inferior maxillæ, and consisted of temporary apparati to be placed in position during the operation of resection of the jaw, together with more permanent appliances for use when the wound was thoroughly healed. An enlarged segment of the maxilla was made in advance, and when the diseased portions were removed the apparatus was cut to a suitable size and shape, taking care that it was somewhat larger than the bone, which had been removed. The apparatus was permeated with irrigation canals, through which antiseptic fluids were forced at a medium pressure, thereby obviating the necessity for iodoform and other dressings in the mouth, which rapidly became infected with the saliva, while the taste of the drugs tended to take away the patient's appetite.

The apparatus for the lower jaw was composed of two parts representing (1) the body of the jaw and the ascending rami; (2) the alveolar border, which, in the temporary cases, was made of rubber to allow the articulation to be made.

When the ascending rami, &c., had been removed, the piece was held in position by the help of springs attached to a plate in the upper jaw. When some of the maxilla and rami remained, the appliance was fixed to the bone, externally by means of plates screwed into the bone, and internally by a plate, which held it in position.

The permanent piece was, of course, made in the ordinary way, and furnished with teeth to improve the appearance. Care should be taken that if the piece was too large to be withdrawn whole it should be made in two parts.

For the upper jaw, the apparatus was composed (1) of the palate and alveolar border, and (2) of the anterior external part of the superior maxilla, and nasal and malar bones, and

floor of the orbit, which last part was composed of two parts, so that it could be easily withdrawn.

When the parts were thoroughly healed, a different apparatus was required to enable the patient to speak distinctly.

The impressions might be taken either in plaster or Stent. If the latter was used, small pieces were taken warm and pressed into the cavity; when cold, it was taken out and the parts fitted together and the model constructed in the ordinary way.

Mr. J. F. COLYER said he had endeavoured on four or five occasions to make appliances of this kind. He wished to ask Mr. Blain whether these instruments, which in themselves were very beautiful specimens, were in practice found to be useful? No doubt the upper jaw was very well reproduced, but he thought that when contraction took place the instrument must be almost useless. He also wished to know how far such appliances would tend to interfere with the healing of the tissues, and whether the action of the muscles on both sides would not pull across the two halves towards the median line, and thus have a very prejudicial effect upon the portions that remained? In one case, where Mr. Boyd removed half the lower jaw for myeloid sarcoma, a plate was put in the lower jaw on the affected side with a view of counteracting the tendency to displacement. Theoretically, the thing was perfect, and it worked very beautifully, but within three days the boy got absorption taking place rapidly on the free margin of the portions remaining, where the plates came. He would also ask whether these appliances were beneficial where portions of jaw had been removed for malignant growth, because looking at them simply from the common sense point of view there were plenty of points about them which would certainly cause a large amount of irritation to the tissues. He had been working with Mr. Boyd on two or three cases of the kind, but his experience was that though theoretically they were very pretty, practically they were quite useless.

Mr. BLAIN, in reply to Mr. Colyer's question, said one point of usefulness was, especially in the case of the lower appliance, that it did away with the effect of having dressings inside the mouth, which were not only prejudicial to the patient's appetite, but also soon became very foul. The patient might have some time to live, and the relief given seemed to make his life happier. With reference to the contraction in the upper, it no doubt went on to a certain extent. Dr. Martin however, found in his experience that generally speak-

ing, it was very slight. He had had several successful cases, and in one the patient had worn a permanent apparatus for about ten years, and the contraction was very slight indeed. With regard to any irritation, there was certainly a tendency in that direction, but if the piece was firmly screwed in, the irritation was, after all, very slight, if the apparatus was thoroughly irrigated with antiseptics.

Mr. DAVIS exhibited an artificial nose constructed by Mr. Bond, of Brixton. He said that the patient was in attendance, but being extremely sensitive, declined to present himself before the meeting. He would further say that he could claim no personal credit for either the planning or execution of that piece of work. He saw it when it was completed, and asked Mr. Bond to allow him to bring it before the Society. The patient, some ten or eleven years ago, was run over in Glasgow, and, according to his account, the practitioner who attended him did not treat the case properly, with the result that he lost the bridge of the nose. He was afterwards operated on by Dr. Heron Watson, in Edinburgh, who removed finally the whole of the external and internal parts of the nose and also enlarged a large perforation of the palate. Until quite recently the patient wore an arrangement consisting of a nose fixed to a pair of spectacles, which was, of course, very inconvenient, seeing that the spectacles could not be cleaned without the nose being removed. A short time ago the patient suggested to Mr. Bond that possibly the nose could be attached to the plate which he was wearing, covering the perforation of the palate, and Mr. Bond, acting on that suggestion, designed the piece of work now exhibited, and which had been very successful. There was a gold tube passing from the centre of the plate through the opening. The nose had a strong gold pin with a short bar on it, which ran into a slot in the tube. It was put on slightly sideways, and then being twisted straight, enough pressure was exerted to make it fit tightly. The patient had his own ideas about these matters, and experimented a good deal himself in the way of trying to bend the tube and colour the nose, but the results were not always satisfactory to the operator.

(To be continued.)

Dental News.

NORTH EASTERN CIRCUIT.

At Leeds, before Mr. Justice Wright, Joseph Priestley, on bail, 31, herbalist, was charged with the manslaughter of Lavinia Sawdon, at Idle, on April 17, 1896. Mr. Edmondson prosecuted on behalf of the Treasury; the prisoner was defended by Mr. C. Mellor and Mr. Horace Marshall; and Mr. R. Pike, Glasgow watched the case on behalf of the British Medical Association.

The prisoner is a herbalist and a maker of imitation teeth, and though unqualified, practises dentistry at Idle, near Bradford. Lavinia Sawdon was a servant girl in the service of Mrs. Sykes, of Idle. Mrs. Sykes stated that on April 17, at 12 deceased made a hearty meal of beef, potatoes, and pudding and at the girl's request she sent for the prisoner. The prisoner came to Mrs. Sykes's house at 1, examined the girl's mouth, and said he could get the tooth out all right. The girl asked if she might have it out by gas. Witness asked if it would do any harm, and he said, "Oh, no." The deceased then went to the prisoner's house, which was next door. According to the evidence, the prisoner had administered about half an ounce of chloroform on a handkerchief, and had drawn the tooth without any assistance or with any other persons present in the room. No preparations had been made and no remedies were at hand in case the girl did not come round in the ordinary way. Mrs. Sykes, becoming alarmed at the girl's absence, went to the prisoner's house and learnt that the girl had not come round. A doctor was called at once, but the heart's action had stopped, and he was too late to be of any assistance.

Dr. Honeybourne, M.D., stated that he formed the opinion the deceased died from chloroform, because of the asphyxia, and the fact that there was nothing in the *post mortem* to account for the death. It was not the practice for qualified men ever to administer chloroform alone except in cases of urgency. Half an ounce was a very large amount to use, but it depended much on the way in which it was administered.

By the Judge.—Witness stated that no care, however skilful could prevent a person's dying from shock after the adminis-

tration of chloroform. Artificial respiration properly performed would save a person from asphyxia if applied before the stoppage of the heart. He thought it would probably have saved the deceased in this case.

Dr. Lodge, police surgeon, confirmed the above.

Arthur W. Matthews, licentiate of Dental Surgery, and dental surgeon to the Bradford Dispensary, stated he should call in a medical man to administer chloroform while he did the operation. The patient must be watched while under chloroform, and the operator cannot do that.

The Judge, in summing up, stated that, whatever the result, the prosecution was perfectly proper. It had called attention to the dangerous results that may arise from allowing ignorant persons to use and practise a skilled profession. The law allows an unqualified person to perform operations and practise his profession, and, provided he is not negligent but uses due care, he was not criminally liable. The question was whether it had been made out that this man was administering what he knew, or ought to have known, was a dangerous drug without making the necessary precaution of having assistance or in preparing the patient as he ought to have known were necessary. It was said the dress and stays ought to have been loosened; the chloroform ought not to have been administered after a heavy meal; and there ought to have been remedies ready at hand and some person to watch the patient and apply those remedies if anything went wrong. It really came to this—Was he guilty of criminal negligence in using chloroform when he did not know more about it?

The jury, after retiring for two hours and 25 minutes, returned into Court and stated:—"We are unable to agree; we think the indictment is too hard."

The Judge: If a majority are in favour of the prisoner, you must remember the prisoner is entitled to the benefit of any doubt.

The jury then found a verdict of Not Guilty, and the prisoner was discharged, the Judge stating that the jury had taken a merciful view of the prisoner's case.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the April sittings of the Dental Board of the Faculty of Physicians and Surgeons of Glasgow, the following candidates were admitted licentiates in dental surgery:—Albert E. Apperson, Birmingham; Joseph H. Stromier, Glasgow; Thomas B. Carson, Glasgow; Thomas W. Byrne, Liverpool; Garibaldi Watson, Johannesburg; Frederick Samuel Jenks, Sparkhill.

The following passed the First Examination:—Henry Adams, Thomas Allday, Oswald Armer, Bertram Henry Davis, Frederick Samuel Jenks, Joseph K. Pedley, Edwin C. Robberds, Thomas H. Taylor.

BICARBONATE OF SODA FOR ORDINARY COLDS.—Dr. L. Duncan Bulkley strongly recommends the use of bicarbonate of soda in the treatment of ordinary colds. He gives 20 to 30 grains dissolved in two ounces of water every half hour for four doses. If this does not relieve the symptoms, he waits two to four hours and gives another four doses in the same manner. It is rarely necessary to repeat this more than once or twice.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

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DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 396.)

HOW TO MAKE A STRENGTHENED LOWER PLATE.

To make a plate such as is represented by Fig. 24, we must prepare the plaster model for casting, either by drying and varnishing, or by boiling it out in stearine. Next, it has to be padded with wax along the inferior border of the alveolus in the buccal and lingual regions ; this is to turn up the edge of the plate so as to take the pressure off the gums. This padding may extend from the first bicuspid to the end of the plate, and should be about the thickness of a piece of No. 9 plate at the edge, tapering to nothing as it ascends the ridge, that being left clear. The model may now be cast in sand, and three zinc dies and lead counters prepared. Having selected the worst of the dies, the teeth should be bevelled down. A lead pattern is now moulded to the zinc model and trimmed to the proper size. We then flatten the pattern and cut out the gold plate. This should be No. 8, 18 carat. We next proceed to file the edges of the plate quite smooth and free from flaws, after which it should be annealed.

We now with the wooden mallet beat it into the space corresponding to the two front teeth; next we take the wooden block, Fig. 12 and bend the ends of the plate so that they overlap each side of the ridge; the plate must not be hammered around the bicuspids, until the front part of the plate is confirmed in its place, as it would tend to draw the plate downwards and backwards. When the former is assured the plate can be rapidly swaged up. It is as well, however, to place paper between the dies during the operations.



Fig. 24.

After the plate has been swaged into its proper position it should be chased around the necks of the teeth, and trimmed to its proper size, and then after cleaning and annealing it may be stamped on the second zinc model, until a perfect fit is established.

We may now try how it fits the plaster model. If we find this satisfactory, the next thing to do is to swage up the strengthener. Fig. 24 represents a plate ready for the strengthener. We now cut out a lead pattern to the size of the strengthener required; this may be of No. 6 or 7 guage. We next proceed to swage the strengthener into position, and the simplest method the author has found for this operation is

to take the first zinc die and counter, and after annealing the strengthener, bend it roughly to conform to the counter die ; to hold it in position three nicks are cut in the counter with a half-round sculptor, corresponding to the two ends and the middle of the superior border of the strengthener. When the edges of the plate are clamped into place by bending the lead over, it is held so securely in position that there is little chance of any displacement when the zinc model is placed in the counter and a blow is struck.

Having confirmed it in its proper place, it should be cleaned and trimmed to the size required, (Fig. 25), and again annealed.



Fig. 25.

We now take the best die and counter and place the strengthener in position, giving it a gentle blow or two to establish it in its place ; the gold plate is then placed over the strengthener, and after pressing the zinc model into position, it is given four or five heavy blows.

The plate and strengthener are now carefully removed from the lead counter either by gently lifting up the edge of the plate with a suitable instrument, or by giving the face of the counter die a blow on the swaging block.

The two plates are now placed in the acid to clean, and then tried on the plaster model ; if the fit is satisfactory, the next operation is to prepare for the soldering.

STRENGTHENERS.

The addition of a strengthener to a gold plate is twofold. In the first place it stiffens and strengthens the plate, and permits, in the case of a lower, of the lingual edge of the plate being made thick and round, so that it is not likely to fret or chafe the soft tissues lying beneath the tongue in the floor of the mouth.

In the second place it makes the plate thicker along the top of the ridge, and so gives a stronger and better hold for the pins if tube teeth are used.



Fig. 26.

In partial cases where the plate has to pass between two natural ones, for the purpose of carrying an artificial tooth, it should be doubled; more especially is this necessary when the tooth on each side of the space is clasped, so rendering the narrow tongue of metal weaker.

All strengtheners before being soldered should accurately and closely fit the plate, and except in the case of the lower edge of a lower plate, should be bevelled to a feather edge where it joins the main plate, and the outer surface of the plate and the inner surface of the strengthener should be made clean and bright, either by scraping with a half

round sculptor after pickling, or by giving them a rub at the wheel with pumice.

The opposing surfaces of the plate and strengthener should be painted with a little thin borax, and the two plates held firmly together by strong iron clamps (see fig. 26). If these precautions are not taken, and the plate is made hot in order to solder it, the borax swells up, and is likely to displace the strengthener, and make the soldering very difficult, if not altogether impossible.

When soldering a strengthener, Ash's No. 2 or its equivalent is used, cut into small pieces, and arranged, after dipping in borax, along the superior border of the plate. Then the plate should be heated under the blowpipe until the solder melts and appears at its lower border. Sufficient solder should be run along the margins to obliterate the line of junction, and also to permit of a good finish.

All other soldering may be done with No. 3, which is a slightly lower grade.

Sometimes it is necessary to solder a piece of pivoting-size wire around the border of a gold plate. This allows not only of a thick round edge being made, but also allows of a little easement of the plate should it press anywhere.

There is another form of strengthener used principally when one has to adapt prominent teeth to an upper gold plate. These teeth have a great tendency to be bitten on-wards, and to overcome this a piece of thick wire flattened, adapted and soldered to the front border of the plate, will permit of the teeth being brought a little more forward at their necks, and adds greatly to their strength and appearance.

TO FORM A MASTICATING SURFACE IN SHALLOW CASES.

In some cases where the bite in the bicuspid and molar region is very shallow, we may employ solid metal teeth in the place of those of porcelain. These teeth may be made con-

veniently in either of the following ways : The first method is to mould up a piece of composition on the plate and articulate it to the bite ; we next file up the composition to the form of the teeth as neatly as possible. The composition, now fitting the plate and bite, is removed and sunk midway in an investment of brickdust and plaster, which, when hard, is trimmed up ; then holes are made in it, to act as guides, and the surface is soaped, and finally more investment is mixed up and poured on the surface to form the other half of the mould. We have now a composition tooth or teeth embedded in brickdust and plaster. The next thing is to place the mould in hot water, this will soften the composition teeth, and allow of the parting of the mould. After which the composition is removed, and a gateway made for pouring in the metal. Besides this main gateway, which should be situated in such a position that the portion of metal in excess can be readily removed from the cast tooth without altering its form, there should also be scratches extending from the centre of the mould to its circumference ; these are for the escape of air, when the metal is being poured.

It is as well to bind the mould together with iron wire, and while the silver or other metal is being melted the mould can be placed in the furnace in such a manner that it can be readily heated up, without endangering it. It should be very hot when the metal is poured into it.

Another method, is first to mould a piece of platinum foil to the plate. The foil should be slightly larger than the base of the tooth required. We now neatly mould up a tooth in wax or composition on the foil, and articulate it with the bite.

Removing the foil with the wax tooth and sinking it in brickdust and plaster up to the level of the top of the wax, the next thing is to warm up the invested wax tooth ; then remove the wax leaving the platinum foil in the base of the cavity, and afterwards heat up the mould over a Bunsen burner until

nearly red-hot. We now take some scraps of silver and gold and flow them by means of a Fletcher's blowpipe on to the platinum foil until the space left by the wax is filled up. We shall now have a metal tooth that will fit the plate perfectly, and only require the articulating surface to be filed up.

These teeth if of gold need not be of so high a standard as the plate, but if of a lower standard the alloy should be silver in preference to copper.

There is yet another method, and that is to melt up some gold or silver under the blowpipe into a button, which must then be filed into shape and fitted to the plate; this method is not so workmanlike as the first named, but is more useful when one has to make a biting surface at the back of flat teeth. These, where possible, should have a gold biting surface, made to represent the back of a natural tooth attached to them, either by soldering it to the back prior to fixing to the plate, or, at the same time that the teeth are being soldered to the case. A shallow biting surface may also be made of vulcanite.

As a gold plate fitted in the way described should command a liberal fee, so should we be liberal and conscientious in our work, and not shirk a little labour to arrive at more perfect results.

COMBINATION OF GOLD WITH VULCANITE.

We may have cases presented to us where the second bicuspids and molars have been lost on both sides. In these cases if the spaces are very deep it is advantageous to mount the teeth in vulcanite on the gold. We have in such cases the advantage of the gold plate taking up less room at the backs of the front teeth and also of the vulcanite in building up the lost alveolus, and making a piece in which the food cannot accumulate, as unfortunately happens where long tube teeth are used.

(To be continued.)

CROWNS.*

By Mr. C. T. ANDERSON.

Mr. President and Gentlemen,—It is my intention to bring before your notice a few of the very many methods of crowning teeth. Time prevents me from saying much concerning the preparation of the roots. The treatment is the same whether it be for a filling or a crown, but the preparation of the root has to be slightly modified to suit the special kind of crown used. Before passing on I should like to say that I think a great many of the failures in pivoting are due to the thinness of the pins, the latter often breaking off short in the roots. The only way to obviate this failure is to make the root canal as large as possible, without impairing the strength of the root, and to make the pivot pin fit the canal. Another source of failure is due to the crowning of teeth which ought not to be crowned. There are many roots which cannot be rendered suitable for the successful application of crown and pivot work ; such are, roots permeated and softened by decay, exposed or loosened by absorption of the gums and alveoli, or affected with irremediable diseases of the investing membranes, and those roots in which abscess and necrosis have extensively impaired the walls of the alveoli.

It will be convenient to consider this subject of crowning under two heads—Pivots and Crowns.

Pivots. Of these there are a great variety. I will first describe the ordinary kind. The root, having been rendered thoroughly aseptic, and the apex sealed, is prepared by enlarging the root canal, and grinding the surface nearly level with the gum all round, except on the labial aspect where it is ground slightly below the gum. After the root is

* Read at the Students' Society, Liverpool Dental Hospital.

prepared, a piece of thin platinum or gold, 20—24 carat is burnished on to the root ; in doing this a dent will be made in the metal indicating the position of the canal and a hole is then made the same size as the wire to be used for the pivot pin. This pivot pin and base are now tacked together with a very small piece of solder and again burnished on the root. It is now ready to receive the porcelain tooth which can be either ground down to the root or to a plaster model. If it has been decided to let down the porcelain tooth to a plaster model, the impression is best taken with a small piece of composition and with the base and pivot pin in position, so that they will come out in the impression. The porcelain tooth is next backed with gold, waxed in position and soldered and finished in the usual way. This method is only advisable for front teeth (central and lateral incisors and canines). There is another very similar method, which consists in letting down a tube tooth instead of a flat one. There are teeth manufactured for this special purpose. The only difference is, they are hollowed out at the base, there is not such a great variety to choose from, and they each cost 3d. more than the ordinary tubes. The one advantage of this pivot is that there is not much metal to be seen. There is a great variety of these all-porcelain pivots, namely, the Bonwill, Gates, Foster, Logan, Brown, New Richmond, and Howland. The idea of the first three is precisely the same, there being a slight modification in the method of fixing the pivot in the root, one being fixed with a bolt and nut, while another is only dependent upon the undercuts in the porcelain. The others differ in having the pins fused into the body of the pivot. I think these pivots are in great use in America where they fasten them in with amalgam. I have had no experience in this line, so cannot say whether it is a good plan or not, but I should imagine that if they did not get the join between the pivot and root well under the gum, there

would be a nasty blue line that would rather give the show away, and again if the pivot pin broke, as they do at times, it would be very difficult to get it out again. The quickest and simplest of these seems to be the Logan pivot, which is one with the pin fused in. It is hollowed out at the base and only requires the edges to be ground to fit the root. It is then ready to be fastened in with either amalgam or oxy-phosphate.

All these pivots may be made more elaborately by fitting a collar or band round the neck of the root and base of pivot. This entails very little more trouble, and adds very much to the strength of the pivot, besides protecting the material with which the pivot is fastened. Here is a very easy way of making a collar for a Logan pivot. After preparing the root and fitting the pivot in the usual way, make a band of pure gold to fit the neck of the root, place a piece of wire or wood in the canal, and having put the band in position on the root, fill in the space with modelling clay, and remove all together. Next melt some fusible metal and pour into a shallow vessel, and while still molten press the collar and clay into it, burying as much of the gold collar as fits round the neck of the root. When the metal is cold the clay and wood or wire are removed, and the Logan pivot is pressed into the collar, coaxing it down by burnishing the collar round it. Before leaving the all porcelain pivots I must mention the home-made ones. Of course to make these pivots it is necessary to have a furnace. A very handy one is Downie's Porcelain Crown furnace. By this process pivots are made in the ordinary way using porcelain instead of solder.

The root being prepared, take its measurement with a piece of thin binding wire, cut a strip of platinum the same length and solder the ends together with pure gold, using as little as possible, a small gold cylinder being very useful for this purpose. Fit the band on the root and grind down level

with it. Now take the band and lay it on a piece of platinum and solder it with pure gold. Again replace on root and ascertain position of canal and punch a hole the size of wire to be used. The cap is now completed. Next take the wire for pivot pin, and flatten out one end wider than the space between the two pins of the porcelain tooth, which may be an ordinary plate or vulcanite tooth. Having flattened the wire, file a notch at each side to receive the pins, and bend them over the wire. Measure root canal to get length of pin required, cut off, taper and finish the post in usual way. The tooth is now fitted to the proper position by bending the post if necessary, and grinding the base if too long. Now wax the tooth and cap together in proper position, and try in the mouth to see if articulation is correct.

Mix up some sand and plaster, fill the cap and build it up round the post. When this has set wash off the wax with boiling water. The cap was filled with sand and plaster, simply to hold the post and tooth in position, but by investing the whole tooth in sand and plaster the cap and pins of tooth may be soldered to the post. The next step is to build on the porcelain body. This is in the form of a powder, and is mixed with water and applied with a small camel's hair brush. A colour rather darker than the base of the tooth should be used, as the platinum is apt to make it appear lighter. The post is held with a pair of pliers while the body is applied with the brush, filling in all the crevices between the pins and post and cap, and round the front over the platinum band. The body should be mixed rather stiff, but not so stiff that when the pliers are tapped with the brush handle, the porcelain body does not smooth down. Having built up to shape required it is ready for fusing, which is done by placing it in the muffle, and raising the temperature, very slowly at first, so as not to crack the tooth or the body, until the body has a glaze on it. It is then allowed to cool, and if necessary, it

can be ground to relieve bite, or more may be added to improve the shape. If these pivots be carefully made, they finish with a good glaze, and are ready for inserting in the mouth.

Sometimes it is desired to pivot a root which is decayed down the root canal and has a quantity of soft dentine, but has fairly good edges. A simple plan is as follows. Having rendered the root thoroughly aseptic, and having filled the apex, excavate or drill out all the decay and softened dentine. Tap the root canal and screw in a piece of platinum or dental alloy wire, having first put in some very thin oxyphosphate. Let down an ordinary tooth to the labial edge of the root and twist the pins round pivot pin. Lastly, fill in the root and all spaces with amalgam contouring up to shape.

CROWNS. These are divided into "partial" and "all gold" crowns.

The "partial" crowns consist of a crown with a porcelain face, and are especially useful for bicuspid, where "all gold" would not look well. It is specially adaptable where the labial portion of the tooth has gone, but the lingual portion remains. The manner of making is this; having ground your tooth well down in the front, a plate-backed tooth is ground to fit. A gold collar is next made, which will afterwards be described, to fit the root; the front or labial part of this band is next filed down, leaving a very narrow band to lie below the gum margin. The backed tooth is now fixed in place with wax, and the bite taken, then the whole is carefully removed, cusps struck up to bite, in pure gold, when this is down the final soldering may be done. This makes a very useful crown, but requires some care in the making.

"All gold" crowns. A good way of ascertaining the size of band in these crowns, as in the previous one described, is, after grinding the root suitably, to take a piece of binding wire, place it round the remaining crown, and twist together

until it is quite tight round the crown, then take off and cut the wire opposite the twisted part and straighten it. This gives the exact length of the band of gold necessary for the collar, the height can be guessed by the bite. A strip of gold is cut to this size and soldered edge to edge, and is fitted by burnishing against the crown and pressing up or down as the case may be. Or a collar may be made by fitting direct in the mouth. Cut a strip of gold about the length required, and bend to a shape as nearly as possible to the root, then place it on the root and shape it closely by using a burnisher. Cut off the surplus gold and replace it in the mouth, and fit as finely as possible, and solder either over a spirit lamp or blowpipe. The collar being made, we next turn to the top or crown. This can also be made in several ways, a few of which I will describe.

1. Fit the collar on the root and fill it with plaster, place a piece of pattern lead over the antagonising tooth and take the bite. The collar is then removed and the plaster trimmed to the desired shape representing the cusps and fissures of the natural tooth. A cast is to be taken of this. A very easy way is as follows. Take a piece of brass tubing slightly larger than the crown, and fill it with modelling clay, press the shaped plaster into the clay as far as the collar, wrap a piece of brown paper round the brass tubing letting it come above the desired height of die, and pour into the impression some fusible metal, Melling's, or otherwise. When this die is cold, take a thick piece of lead and cut or punch a hole in it roughly to the shape of the die, then hammer the die into it, thus making a counter die. Then strike up a piece of pure gold with this die and counter die, trim the edge to fit the collar accurately, then fill the cusps up with 20 carat gold, and solder with 18 carat. This may be done on the model, but the plaster cusps must be cut to let down the crown. The two parts may be held in position while solder-

ing with binding wire or special soldering clamps or tweezers.

2. The crown may be made by taking an impression and bite in wax or composition with the band in position, and casting a model and articulation in plaster, then the crown can be built up in wax, and the die cast and the crown finished the same way as the last. This way is perhaps better when the crown is to be made between the visits of the patient, as there is always a model and bite in case of accident. Then there is the method of striking up crowns from ready made dies, but these need some manipulation in order that they may fit the collars as the dies are only made in average sizes and shapes. I have seen it stated in books that whole molar and bicuspid crowns can be made in one piece. The idea seems quite feasible in print, but I do not think it is as easy as it seems. I prefer to make the collar separately.

PORCELAIN INLAY FILLINGS.*

By Dr. H. H. TOMPKINS, Utica, N.Y.

In describing the method employed by Dr. Russell in making and adjusting porcelain inlays, I wish to preface the paper by saying, that in my hands, it has not worked quite so satisfactory as I had hoped and expected. Still, it is unique, and, I believe, will be of interest to every practitioner.

It is intended to apply to that class of cavities on the

* Read at the 28th Annual Meeting of the Fifth District Dental Society of the State of New York.

labial surface of anterior teeth that are round or those which can be made so.

By the usual method of baking an inlay in a matrix, the porcelain shrinks nearly one-fifth and is, therefore, one-fifth smaller than the cavity, plus the thickness of the matrix. This space is filled, of course, with the retaining medium, but this, in a short time, washes out and is conspicuous by its absence. Not long since an attempt was made to grind an inlay to fit a previously prepared cavity but so much difficulty was found in getting a proper adjustment that it did not come into general use.

By the plan suggested, many of these objectionable features are eliminated. The operation is performed as follows :—

The first requisite is a supply of tapering inlay rods. The next is a mandrel which will receive and hold them.

The cavity is first deepened and made approximately round with an ordinary engine bur.

Having selected a rod of the required shade, it is placed in the mandrel and retained there with Jeweller's cement, no particular pains being taken to centre it. The rod is then reduced in size and centred at the same time by revolving the mandrel in the engine, and holding it in contact with a carborundum wheel which is running in the opposite direction. When the rod is reduced sufficiently to enter the cavity very slightly, it is taken to the mouth, and, while revolving, is pushed slowly into the tooth, the porcelain having sufficient grit to cut its way, and the cavity is thus actually *ground to fit the rod*, the same as a glass stopper fits the bottle. The depth of the cavity is then marked on the rod. A line is cut with a disk at this point so that the rod will break readily. Next place a small quantity of smooth, slow setting cement around the walls of the cavity and set the inlay by twisting it into place ; break the rod, and hold the inlay in position with a stick until the cement hardens.

If the work is carefully performed, the retaining medium is reduced to a minimum, and the union is almost imperceptible.

Porcelain work has always been an inviting field, and while this principle may not have a wide range of application, it must be remembered that a dentist's life is made up of small things, and that an inlay filling will be found very acceptable where other material would be objectionable.

THE MOON'S INFLUENCE.--There is a query addressed to the *Dominion Dental Journal* which takes us back to the middle ages with its superstition and mysticism. "Has the moon's phases any influence upon animal tissue, and would the fit of a set of artificial teeth be in any way affected by such influence?" When the world was younger, and the phenomena of the heavens less understood, the moon, stars and planets were supposed to exert a powerful influence upon human affairs. Our word "consideration" of course means "taking counsel with the stars." The moon with its varying phases, eclipses, and actions upon the tides, was a source of perennial mystery. One of the ingredients of the witches' cauldron in *Macbeth* was bark of yew rendered still more deadly by being gathered in the moon's eclipse, while Milton with poetic licence suggests that the boat in which Lycidas was drowned was "built in the eclipse and rigged with curses dark." However Shakespeare hits the mark when he says "'Tis in ourselves not in our stars that we are underlings." We might paraphrase it and say "'Tis in our poor impressions and careless bites, not in the moon, that we have failures." Certainly it is a plea that would not hold good in a County Court action.

British Journal of Dental Science.

LONDON, JUNE 1, 1896.

THE NEW PHOTOGRAPHY.

We have heard a great deal lately about the New Photography, although many people insist that it is not new, and that it is not photography. These hypercritical folk may have their own way; the fact remains that although the x rays are not new, the methods of using them are, and if the word photography means the result of light acting on a sensitive film, then it is undoubtedly photography. The light may not be such as we can see, yet the ultra violet light, *is* light, although its vibration does not affect the optic nerve like ordinary light.

Dr. John Macintyre read a most interesting paper before the British Laryngological Association last month upon the Röntgen Rays in Laryngeal Surgery. Dr. Macintyre has been experimenting not only in photographing the larynx and thorax, but (by using extremely powerful apparatus) he has also been enabled by means of the cryptoscope to *see* shadows of the different bones of the extremities, the vertebral column, ribs, clavicle and scapula. In the present state of our knowledge, photography by means of the rays seems to be in a more advanced stage than cryptoscopy (viewing the hidden tissues by means of fluorescent screens). With regard to the former, Dr. Macintyre had in the living subject photographed the vertebral column in the chest and neck (above and below the maxilla) so distinctly that destruction of bone would easily be detected. He had also photographed the chest for the presence of foreign bodies, and he had been able to photograph the larynx in the human subject, the picture obtained showing the base of the tongue, hyoid bone, thyroid and cricoid cartilages with epiglottis. He had also photographed the bones of the face

in health and disease, in the latter case showing destruction of the upper jaw, the result of malignant disease. In using the cryptoscope he found that the light easily penetrated the tissues of the neck and chest. Upon examining a patient who had swallowed a halfpenny six months ago, he could easily see the round black shadow of the coin at the level of the third dorsal vertebra. Dr. Macintyre had great difficulty in examining the Antrum of Highmore as the mouth was not large enough for the generating tubes, so he had to be content to generate the x rays outside the mouth.

These experiments and results are of great interest and importance to us as dentists. This wonderful power of looking "beneath the surface" may be of inestimable importance in the case of a plate impacted in the œsophagus. By the way we must bear in mind that a gold or dental alloy plate would be impervious to the rays while a vulcanite plate would be quite transparent to them. Other cases easily present themselves to our minds, such as the blade of a pair of forceps, or a tooth, impacted in the trachea. As foreign bodies in the trachea are often very difficult to localize, any aid to their detection and localization must be eagerly hailed. In photographing the human teeth in the living subject the rays have been to a certain extent successful, and we may fairly hope that with more powerful apparatus and improved methods, the roots of the teeth may be more clearly defined. We all know how important it is in regulating teeth to ascertain the direction in which the roots of the various teeth lie, and how difficult it is sometimes to gauge the exact bearing of one root upon another. If the rays will give us this information, we shall have reason to be grateful. We may be able to determine that vexed question whether, when pressure is brought to bear upon any tooth by a mechanical appliance, the whole tooth can move bodily, or can only describe a segment of a circle, the apex being the centre, and immovable. Is it too much to hope also that the phenomena of absorption of the deciduous teeth and the eruption of their successors, may be more clearly understood? The amount of knowledge that has been acquired dur-

ing this century upon scientific subjects, is immensely greater than in all the previous centuries of the world put together. A great part of this knowledge may not perhaps be at present of great practical use, but we may be sure that each new discovery, each new atom of knowledge, is a stepping stone to something higher, perhaps to some great generalisation which will supersede present theories, and open fresh fields of knowledge. It is our duty to convert any such discoveries to the aid of the specialty we have made our life work.

TESTIMONIAL TO MR. H. G. READ.—The Staff dinner of the National Dental Hospital on the 14th ult., was marked by an event of more than usual interest, namely by the presentation to Mr. H. G. Read of a very handsome time-piece by his late colleagues on the Staff, as a token of goodwill upon his approaching marriage. Mr. Read has lately resigned his position upon the Staff, after fourteen years' work for the Hospital, to the regret of all his colleagues. The presentation was made by the Dean of the College, Mr. Sidney Spokes, who was in the chair, and Mr. Read responded in a few well chosen words. Several toasts followed, interspersed with music, vocal and instrumental; in fact the Staff is uncommonly well off for the latter commodity, being able to boast of a vocal quartette (Messrs. Smith, Wheatley, Rushton, and Maughan), an excellent violinist in Mr. Roughton, most humorous vocalists in Mr. Glassington and Mr. Hopewell Smith, while Dr. Maughan as accompanist left nothing to be desired. Dr. Cunningham's improvisation in very blank verse moved everyone to tears—of laughter. A charming feature of the evening was the menu card embellished with cupids, and rhymes by the "Hospital Poet," etched by the Dean. The occasion will long be remembered as a most enjoyable one, only tempered by the fact that the Staff would lose an esteemed colleague.

THE EXAMINATION AT THE IRISH COLLEGE.—On another page we publish the written Questions and the Pass List of the recent Examination for the Dental License. We hear that fourteen gentlemen entered their names for the Examination; one withdrew but of the others eight were referred and five passed. Some time ago we drew attention to the method in which the Examination is conducted, and we understand that the eight unsuccessful candidates did not survive the practical portion of the test and were informed that they need not present themselves for the written portion. It seems that the work expected in Dental Mechanics is of special importance, and it is well that intending Candidates who may be inclined to judge of the severity of the Irish Examination by its past reputation should know that a change seems to have come about and that unless they can face Gold Fillings and Practical Dental Mechanics successfully, they will not get a chance of trying the papers. We shall be interested to see the report of the Inspector appointed by the General Medical Council; he was, by the bye, present at this last Examination.

CATAPHORESIS.—Dr. Wait of Boston (Mass.), has informed his dental brethren that he has given up using Nitrous Oxide Gas because he could never obtain certainty with it. "Sometimes a certain amount would hold the patient through the longest operation: again in the case of another patient it would scarcely have any effect." While admitting that some patients "take the gas" much better than others, we have never seen any anæsthesia under its influence sufficient for the "longest operation," and we have never seen a patient take it so badly that a short operation was not possible. We must not be tied to a "certain amount," the amount does not matter so much as the symptoms in each individual case. Dr. Wait, however, having discarded gas has taken to employing "Cataphoresis," which seems to be the application of obtunding drugs such as cocain, used in conjunction with a powerful electric current. The results

obtained so far lead us to think that it will not supersede gas just yet.

SHORTHAND FOR STUDENTS.—The value of shorthand to staff officers in the army is now recognised in the Queen's Regulations, and its use has been made compulsory for Foreign Office *attachés*. As the *Lancet* points out, the benefit that a knowledge of shorthand confers in education is becoming daily more and more recognised. A Society of Medical Phonographers is already in existence and has presented a petition to the General Medical Council asking that Shorthand should be an extra optional subject for the Preliminary Examination and if the request be granted it will be worth while for intending Dental Students to make provision, possibly whilst still at school, for acquiring an art which may stand them in good stead both at the Preliminary Examination and during attendance upon Hospital Lectures and Practice.

A CAMPAIGN AGAINST FOREIGN MEDICAL MEN IN FRANCE.—The *Médecine Moderne* informs us that the *internes* in medicine and surgery of the Paris hospitals have almost unanimously signed the following petition. 1. "Any foreigner may be allowed to enter in a French faculty of medicine, but the degree of M.D. can only be accorded him to use out of France, without conferring any right to practise in France." 2. "No foreigner can practise in France unless he be naturalised a Frenchman, have performed military service in the French army, and be provided with the degree of *bachelier*." When we consider that the French M.D. can practise unmolested in our own free England we cannot but wonder that educated young men should lend themselves to such illiberal proposals. Rightly or wrongly the English (who are the greatest travellers in the world) prefer when abroad to consult doctors and dentists of their own nationality, and we feel sure that such an illiberal

protectionist policy would do our neighbours, who boast of liberty, equality, and fraternity, more harm than good. Our medical and dental diplomas are open to all who can obtain them, to practise in the Queen's dominions without let or hindrance.

DEATH THREE DAYS AFTER CHLOROFORM ADMINISTRATION.—The report of a case reaches us from Germany of a patient who died from the effects of chloroform used as an anæsthetic for the removal of fourteen stumps. About 70 cubic centimetres was administered, and the patient vomited many times after the anæsthesia. On the next day the vomiting persisted, and there was slight jaundice. The pulse began to be accelerated, and on the following day the urine contained albumen. On the next day the patient became restless, and the pulse rapidly increased in frequency. The pupils were widely dilated. On the third day death supervened. At the necropsy there was recent fatty degeneration of the heart, liver, and both kidneys. This of course was a case in which chloroform should on no account have been employed, in fact we heartily condemn its use in dental practice altogether. The fatality differs from the ordinary run, inasmuch as the chloroform narcosis was not immediately fatal.

THE DENTIST IN ARMENIA.—A letter has been placed in our hands from a brother practitioner, an Armenian, who studied over here and returned to Armenia to practise. He has not been able to write to England for a long time, as it would have laid him open to suspicion, so he had to wait until a friend was leaving for Egypt, through whom the letter was dispatched. The Turks made a raid upon Aintah where he was in practice, and although his private house was spared, his surgery was looted. He considers himself fortunate in being able to purchase back some of his instruments after a couple of months, and says that for four

months he has been afraid to go into the streets. He is naturally desirous of leaving his "most distressful country." He upbraids the British government for not helping Armenia in her struggle for freedom, but however desirous England may be to become the policeman of Europe she can do little, if other powers will not co-operate to keep the "unspeakable Turk" in check.

WANTED! AN ANÆSTHETIC.—There is no doubt that Nitrous Oxide gas is at present the dentists' anæsthetic *par excellence*. It is given quickly, safely, and as a rule brings with it no very unpleasant after-effects. But in many cases like the one in the preceding paragraph, the anæsthesia would not be long enough. Ether gives a sufficiently long anæsthesia for all ordinary dental operations, but it requires a somewhat complicated apparatus, frequently produces sickness, and leaves an unpleasant taste and feeling sometimes for days. Cocaine is extremely dangerous, and only local in its action. What we want is an anæsthetic as safe and pleasant as gas which will give an anæsthesia for say five minutes. How long are we to wait for the perfect anæsthetic? Perhaps it will be discovered at the same time as the perfect filling material.

SUDDEN DEATH FOLLOWING EXTRACTION.—It is not uncommon to find indications of faintness where extraction of teeth is performed without an anæsthetic, and instances are occasionally recorded of fatal syncope. Such a case formed the occasion of a coroner's inquest at Brierley Hill on the 16th ult. The patient, a woman, died a few minutes after the extraction of a molar by a registered dentist.

ROYALTY AT GUY'S.—We see that H.R.H. the Prince of Wales paid a surprise visit to Guy's Hospital the other day and inspected the Medical and Dental Schools. Several members of the Royal Family are Presidents of our Metropolitan Medical and Dental Hospitals, and take a deep interest in the welfare of these beneficent Institutions.

Abstracts of British & Foreign Journals.

SYSTEMIC MEDICATION FOR DENTAL PURPOSES.

By Dr. ELGIN MAWHINNEY, CHICAGO.

I do not wish to enter deeply into the discussion of the diseases of the peridental membrane, for upon that subject much has been written of late, although very little has been positively determined, and my studies and experiments along this line are not yet completed. There are diseases of the peridental membrane both with and without calcareous deposits, dependent upon constitutional causes, and so far as I am now able to determine they seem to be of a scorbutic and gouty nature, and in addition to removing the deposits mechanically we must look to systemic medication for valuable aid in effecting cures. In those gouty conditions there is no increased formation of uric acid as many have claimed, but instead the blood is only faintly alkaline, and therefore quite incapable of holding uric acid or its salts in solution; so that at least it is theoretically true that any agent capable of assisting the blood by rendering it more alkaline will be valuable in correcting and avoiding these disorders. For this purpose I had for some time used bitartrate of lithia with apparently good results, but it often proved so irritating to the stomach, causing violent nausea and headache, that I have abandoned it except as found in the lithia waters.

For the past eight or nine months I have been using lycecol, an alkaline tartrate of dimethyl-piperazine. In the organism it seems to be converted into the carbonate, which renders the blood more alkaline. It has the advantage of being very palatable, not unlike lemonade. It can be given in quantities of 15-45 grains a day without any deleterious effect upon the stomach. The usual mode of administering it is 5-10 grains in a tumbler of water three times daily, half an hour before eating. It is a certain prompt diuretic. With it I have had several happy results, especially in those cases of swollen, suppurating gums with pockets high up on the root where there were no appreciable deposits. However I have come to the conclusion that more can be done for these

chronic cases by a well ordered dietary, aided by abundant exercise in the fresh air than in any other way. In all cases of perverted nutrition, whether it be shown in a general lowering of the tone of all the vital forces and excretions, or in a poorly calcified tooth, the best treatment will be to furnish nature with natural sources from which to draw her needed elements, and then by careful hygienic measures aid her to extract them. How the notion that the administration of chemical preparations of phosphorus and phosphates should aid in the development of bone and dentine should get such a hold upon the minds of the profession I cannot understand. How the administration of a few grains of phosphates can supply a deficiency of phosphorus in the system when it is daily excreting not less than 54 grains is simply inconceivable. Nature always prefers to be her own laboratory, and gather from nature's sources the elements needed for her rebuilding. Better far to stimulate the system to take these phosphates, etc., from the many forms of wholesome food in which they are so abundant, and the best means of thus stimulating the system is in enforcing clean, wholesome dietetic habits, abundant exercise and careful respiration.

To recapitulate: The main thought of this paper is to show that in all phases of our special work we must learn to recognise general systemic conditions as making for or against our success, and the time is coming when to be a successful dentist we must be able to harness these straying functional derangements of the whole organism which have to do with our special fields, and bring them under the control and in harmony with nature's laws. Surely we must broaden the scope of our horizon or we cannot long be called a learned profession.

The Dental Review.

THE ARTISTIC IN CROWN AND BRIDGE WORK.

By L. A. EDWARDS, D.D.S., Chicago, Ill

A piece of work to be artistic must be perfect in all respects, judged not only from a mechanical standpoint, but from the effects produced upon the eye of an observer. A crown or piece of bridge work may be perfect mechanically, but still be very far from artistic. How many crowns do we see that

could be made perfect by a slight change in the position of the facing, either by throwing the neck or cusp out or in a little, or changing the position a hair either mesially or distally, their number is legion. Again how many of our dentists are colour blind? Every day crowns are seen of a different shade from those of the natural teeth. What a pity, when with a little care and watchfulness, the exact shade can be reproduced. How the looks of many mouths, otherwise good and perfect, are spoiled by the appearance of a facing just a little off colour; it has changed during soldering, or the dentist has not been careful enough in picking out the shade, and he is either too busy or does not care, thinks it near enough to the proper shade, or he may be colour blind. Let us hope that it is the latter, for then he cannot be blamed so much, that is of course, if he does not know that he cannot distinguish colours. We would not like to think that he let it go because he was careless, and supposes that it will never be noticed. It will be noticed; sooner or later some kind friend will say "Why your crowned tooth is not the same colour as your own teeth. What dentist did it for you? Now, if you have any more work to be done you must go and see my dentist. He would not let a piece of work like that go out of his office." The result is, your patient loses confidence in you, and somebody who needs patients loses them, and somebody gains them. How many crowns do we see with a broad line of gold showing at the margin of the gums, where the band has not been properly cut out, or contoured, and these margins have receded. It does not look very artistic. Now to be artistic, work of this kind must be perfect from the beginning; the root must be properly prepared, and the band fitted perfectly, then a good foundation to begin upon has been secured. There are more failures from imperfectly fitting bands than from most any other cause. Another cause of failure is from the use of too soft a gold, for I do not believe that a durable crown or bridge, that will stand the wear and tear of mastication, can be made of twenty-four carat or soft twenty-two carat gold, although the claim has often been put forth that the soft gold was the best, as it was so much easier to adapt to the roots. The short experience that I have had, proves to my mind, that too soft a gold will not make a crown or bridge that will stand the immense strain that is put upon it, during the process of mastication.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

DISCUSSION UPON DR. TIMS' PAPER.

Mr. F. J. BENNETT : I do not rise for the purpose of general criticism at this late hour, but I should like to add a little to the questions raised in the paper. As far as I understand it, what the author would like us to say is chiefly how far our own experience and knowledge will bear out or add to the sum of knowledge which already we possess. We may possibly come across cases throwing side light upon these questions. A great deal of the subject matter of this paper is fairly familiar to us from the papers of Osborne and Woodward, which have appeared in our journals, and we have also been kept fairly familiar with it by our text books. In a short paper I read before the British Dental Association some time ago, I tried to bring together what little information there was to prove that there were really traces of teeth underneath what we call our permanent molars, and ventured to express the opinion that those observers who said that these three molars belonged to the temporary series had substantial grounds for believing so, owing partly to the strong similarity between the pattern of the first and second temporary molars, and the first, second, and third permanent molars. The similarity between these is astonishing. Cusp for cusp and ridge for ridge may be matched between the second temporary molar and the first permanent molar ; whereas if we take the second bicuspid and match that with the first permanent molar, there is not the faintest resemblance. That might at least rouse our suspicions in the matter, but when we come to collect evidence, we find there is really evidence of epithelial structures underneath and surrounding the permanent molar teeth, which lead one to suppose that they are either aborted enamel germs or something of that nature. Mr. Eve brought forward a paper describing this, and Malassez has also discovered in the substance of the periosteum epithelial structures. I fancy that the enamel nodules afford almost as good evidence as any to be obtained, as showing that there are really germs of a later series underneath these three teeth. We have not only here

a diminutive tooth attached to the substance of the tooth above it, but we have actually the enamel string or gubernaculum. I consider that this evidence, taken with that of Mr. Eve and others, is really very great in this direction : at the same time I am quite aware that there may appear staggering objections to this view, and that very often the enamel string is found attached to the buccal surface of the tooth, and therefore it might be argued by those who wish to assume a pre-milk dentition that these really are the analogues of the pre-milk dentition. That may possibly be so, but on looking at some specimens I find that nearly as many are found arising between the palatine and anterior buccal, or between the posterior buccal and palatine fang, coming down by a string attached to this position.

MR. ARTHUR SMITH WOODWARD : I have listened, Sir, with great interest to Dr. Tims' paper, but regret I can only speak of the latter part from personal knowledge. For several years I have had the privilege of studying the vertebrate fossils in the British Museum, and the facts of palæontology suggest several interesting points in connection with the problem which Dr. Tims has brought before us. It seems to me that in solving these very broad questions we ought to turn first to those groups of organisms in which they find their simplest expression. Hence I have long been much interested in examining the teeth of extinct fishes, whose skeletons naturally occur in great abundance in almost all water-formed rocks, from the date of their earliest appearance up to the present day. The evidence they afford as to the modes of complication of teeth and the evolution of order from chaos is worth noting. When we study the earliest sharks we perceive most distinctly that the complicated teeth of these fishes are often due to the fusion of originally separate cusps, each little cusp having been formed round its own pulp and primitively free from all surrounding cusps. One family of upper Palæozoic sharks, that of the *Cochliodontidæ*, exhibits the fusion into plates not only of adjoining teeth of one series, but also of successional teeth of several series. It is thus clear that tooth-complication does actually take place among the lower vertebrates by the fusion of cusps belonging to one series, and also by the fusion of cusps belonging to more than one series. On the other hand, there is equally clear proof among fossil sharks that tooth-complication sometimes happens by another method, namely, the multiplication of cusps by some organic process which we do

not yet understand. In the Notidanidæ, for example, which have saw-shaped teeth, the Jurassic species never exhibit more than about five tooth cusps, those of the Cretaceous period often have seven cusps, while those of the latest period before the present, namely, the Pliocene, exhibit the most complicated teeth, sometimes with no less than ten or eleven cusps. It is quite certain that in this case the evolution results from the multiplication of cusps. With reference to the gradual acquisition of a regular arrangement of the dental armature, it is interesting to examine the mesozoic ganoid fishes of the family Pyonodontidæ. These have a pavement of grinding teeth, and whereas this pavement is very irregular in the earlier members of the family (*e.g.*, *Mesodon*) it is reduced to a few comparatively regular longitudinal series of teeth in the latest members (*e.g.*, *Cœlodus*).

Such being the facts in regard to fishes, there is no improbability in any of the theories of tooth-complication propounded by embryologists who have studied the mammalian dentition. Palæontology, however, as yet throws no certain light on the subject. It does not even afford any information concerning the supplementary successional teeth of which rudiments are claimed to occur in several existing mammals. The reptiles with teeth presenting most superficial resemblance to those of mammals, the Theriodontia, occur only in Permian and Triassic strata, and practically nothing is known of the mode of succession of their teeth. The so-called Triassic mammal, *Tritylodon*, is now almost certainly proved to be one of them. At the end of the Triassic period, so far as known, the Theriodonts and their allies all suddenly disappear, both in South Africa, Europe and America, and when undoubted mammalian jaws are first found (Stonesfield slate and Purbeck beds) they cannot be distinguished from those of modern marsupials. In fact, the evidence of palæontology in regard to the evolution of the teeth of the mammalia is very disappointing. Even the "tritubercular theory" to which Dr. Tims has referred with some well-merited criticism, has a much more insecure palæontological basis than most of its supporters and exponents claim for it.

Mr. W. A. MAGGS: We are much indebted to Dr. Tims for his able paper, and for bringing before us the different views held as to the origin of mammalian teeth. It seems to me the multituberculate theory has some *prima facie* evidence to support it; that is to say, in the earliest mam-

malian fossil teeth, represented by the Mesozoic or Secondary period, the types correspond with the diprotodont, or polyprotodont marsupials—either with tuberculate molars, like the phalangers and kangaroos, or with tryconodont molars, as in the carnivorous marsupials—*Dasyuridæ*. It is quite possible that these animals, if they are not Prototherian, have not progressed in the zoological scale at all, and that they are the marsupials, or would be the marsupials if they existed, of the present time. Then, as Mr. Woodward has just mentioned, there is a gap in the geological records, and we come across no new tooth forms until we get to the Tertiary period, with Eutherian mammals, in which the trituberculate molar is found to predominate, and here we have a form of molar like that seen in some of the *Carnivora*, *Insectivora* and *Lemuridæ* of the present day. The homology of the particular cusps is rather doubtful in all orders of mammals. It is difficult to say how the multicuspid teeth were formed, whether by fusion of separate conical teeth, owing to a more limited succession, or by what other means. Dr. Tims gets rid of the pre-milk dentition, which is satisfactory in one way, in that it simplifies the ground a little. I am not at all sure about the correct interpretation of the tooth change in marsupials. When a dentition like that of the opossum or the *Macropodidæ*, or any of those animals with a large number of teeth, is said to belong to the milk set, it is giving a formula for the milk dentition to which there is nothing at all comparable in Eutherian mammals. The usual deciduous dentition is, of course, very much smaller, $di \frac{3}{3} dc \frac{1}{1} dm \frac{3}{3} \frac{4}{4}$. I do not know whether that is a sound argument against it, but it is going from one extreme to the other; the other extreme being to say that those marsupials which had any milk dentition had simply one molar on each side, above and below. Dr. Tims did not mention the development of the deciduous teeth from the epithelial band before the permanent teeth, and, therefore, being arrived at necessarily before the permanent successors, but that is one reason for supposing that if one set of teeth is developed only, it should belong to the deciduous dentition. It has been shown that all mammals have a diphyodont dentition, even the *Cetacea* and *Edentata*, but it is not always the same dentition which persists. Dr. Tims showed on the screen some tooth germ in the pre-maxillary region of a dog. I should like to know whether he has seen this epithelial lamina, which he believes to indicate a third dentition, going all round the jaws, because it is

quite possible it may be an abnormality—an abortive tooth germ in this situation, or the origin of a supernumerary tooth. The so-called first pre-molar of the pig is interesting. The tooth is erupted early, has no predecessor, is lost early, and it has always been a debatable point as to whether it belongs to the deciduous or permanent set. Owen and Flower placed it in the former category. I am glad to hear Dr. Tims say there is a successional tooth to this one, so that it probably belongs to the deciduous set, as has been stated by Lesbre.

Mr. W. B. PATERSON: I should like to supplement the question that Mr. Maggs has put with regard to the dentition of the dog, and in doing so I would revert to the photograph No. 2, placed on the screen. In that specimen of the developing dentition of a dog, we were shown three teeth in process of formation from the same epithelial downgrowth, viz, the deciduous tooth, the permanent tooth, and a third tooth germ. Mr. Maggs has asked whether that triple arrangement is found generally, or only occasionally in jaws. I would like to supplement that by asking, does Dr. Tims find that triple arrangement of tooth germs constant in the dog, to which he has devoted some special attention, or is it an occasional occurrence, such as Mr. Maggs has referred to, and which might be described as a supernumerary tooth? Has Dr. Tims examined the skulls of dogs and found in them the calcified germs of a third set, or taking the region he has shown on the screen, viz., that of the third incisor, has he ever found any constancy in the nature of a fourth incisor?

Mr. BALDWIN: Dr. Tims has asked whether in our experience we have ever met with any evidence of a third set of teeth in the human subject. Judging from my own experience and from enquiry of other members, and from the proceedings of the Dental Societies, I should say unhesitatingly that there is no such thing, and that there has never been any real scientific evidence of a third set of teeth, or even a partial third set of teeth in the human subject. Frequently it has been said that a third set of teeth has been noticed, but when people with knowledge have examined those cases they have always been found to be cases of the wisdom teeth, or other teeth of the permanent series, which had remained buried throughout the greater part of life, and then erupted late. For instance, I have a case under observation at the present time of a lady 70 years of age, who is just cutting her wisdom teeth. There is one other point I

would like to speak upon, and that is that we sometimes, indeed, rather frequently, find supernumerary teeth in the molar region. These have always been a difficulty to my mind, because what do they represent? How do they arise? It would seem from what we have learnt from Dr. Tims's paper that they might be representatives of a third set, the post-permanent set of teeth.

Dr. MARETT TIMS, in reply, said : Mr. Bennett has referred to the occasional occurrence of enamel nodules as affording additional evidence in favour of the existence of additional tooth rudiments in the molar region. Regarding, as I do, the molar teeth as belonging to the permanent series, I should consider these enamel nodules as being calcifications of the dental lamina representing the post-permanent dentition, and which may occasionally give rise to a fully formed tooth.

Mr. Woodward spoke of the fusion of the cusps in fishes. This fusion is extremely interesting in itself, but I do not know that it throws much light on the origin of mammalian cusps, for if the mammalia have sprung from reptiles with haplodont teeth, any cusp fusion that may have taken place in the fishes must be altogether independent. I quite agree with Mr. Woodward's remarks about the tritubercular theory; the formation of the cusps and their subsequent rotation reads very nicely and simply, but we have no evidence of any such rotation having taken place.

Some of the speakers were decidedly in favour of the multituberculate theory. Though this may afford an explanation of the origin of the teeth in some forms, I do not think it can be held for every form. It is not borne out by embryological evidence in the dog, or any of those animals at which Röse and Tæcker have worked. Instead of finding numerous cusps in any early foetal condition, we find the earlier the stage, the simpler the tooth. It begins with a single cone from which others arise. I have already mentioned, too, the specialised dental formula of the multituberculata.

There is one structure to which, I think, perhaps sufficient importance has not been attached in connection with cusp formation, namely, the cingulum.

Mr. Maggs has mistaken my remarks on the marsupial teeth. I regard Lecke's pre-milk dentition as vestigial milk teeth, and the functional teeth of the marsupials as the permanent teeth; thus, once more returning to the view long ago held by Sir William Flower and Mr. Oldfield Thomas, but abandoned since Kükenthal's discovery of tooth rudiments

on the lingual side of the functional teeth. In the same way I would regard the functional teeth of the odontoceti as permanent teeth with their post-permanent lingual rudiments.

I have not found evidence of the three dentitions in all regions of the jaw, only in the incisor, canine, and anterior pre-molar region, most marked in the outer incisor, that is, in the very regions in which Lecke describes his pre-milk dentition.

The first pre-molar, like the molars, I regard as belonging to the permanent series. In the dog this tooth seems to be undergoing suppression, and is occasionally absent altogether, but as serial sections were made of jaws at various ages, and the teeth identified, I have no reason to doubt that the tooth which I have described as the first pre-molar is so in reality. Though I have seen variations in the number of pre-molars in the dog, I have not seen any variation in the number of incisors.

The PRESIDENT tendered the thanks of the Society to Dr. Marett Tims for his paper, and to those members who had brought forward Casual Communications.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of the Society was held at the Victoria Dental Hospital, Devonshire Street, Manchester, on Tuesday evening, the 3rd March, 1896. Mr. W. Simms, President, in the chair.

CASUAL COMMUNICATIONS.

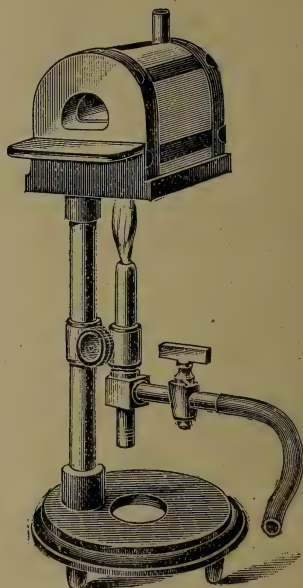
Mr. F. MASTERS brought before the members a method of obtaining Zinc Dies from undercut models. The method consisted of duplicating the plaster model in gelatinous composition and using the duplicate model for casting, after cutting down any elongated or irregular teeth.

Mr. H. T. DRESCHFELD showed Negatives produced by the Röntgen rays. He also showed a Crookes' Tube and explained the necessity of using Bohemian glass in the construction of these tubes instead of English glass which contained lead, and which were therefore unsuitable for the satisfactory production of Röntgen rays.

NEW CONTINUOUS GUM FURNACE.

Mr. GARTRELL demonstrated two new furnaces, a small

one for baking porcelain crowns, blocks, or bridges. It is illustrated in Fig. 1. The muffle is made of drawn nickel which is practically infusible ; it is $1\frac{1}{2}$ inches wide by $1\frac{1}{8}$ ins. high, and $3\frac{1}{4}$ long. It is fitted with a nickel tray on which flint powder or silex is placed to support the work to be fired. The baking of a crown, or block to be mounted on vulcanite, is done in from three or four minutes. A door is not used to close the muffle whilst baking, so that the porcelain work can be inspected during the firing, and the fusing point is easily seen. The muffle is fitted with a nickel tube that acts as a flue, and causes a slight current of air through the muffle,

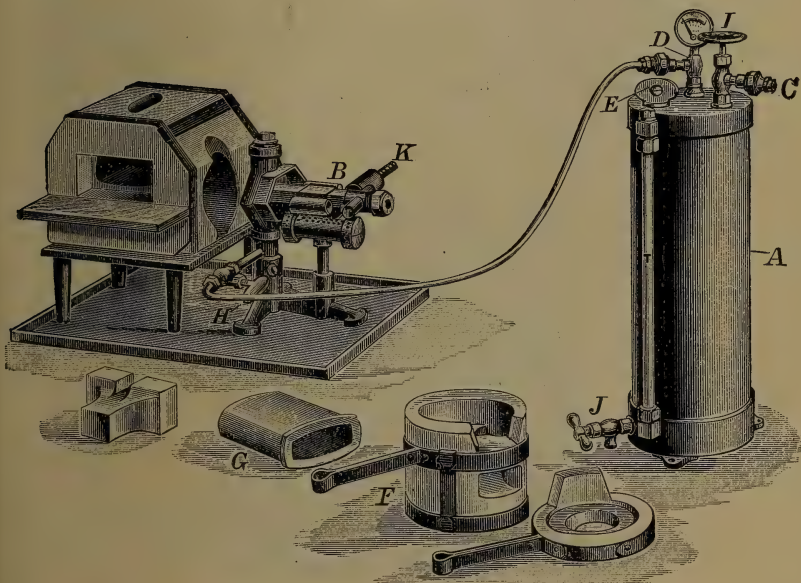


increasing the brilliancy of the porcelain colours. About one dozen shades of porcelain body and gum enamel are supplied with the furnace. Mr. Gartrell baked a block of four teeth in about four minutes, doing it very easily with a Fletcher blower and ordinary gas.

Fig. 2 shows the larger furnace for continuous gum work. It is also fitted with a nickel muffle $5\frac{1}{2}$ inches long by 3 inches wide inside, shewn at G, sufficiently large for any case.

In the use of nickel for these muffles, gassing of the work, (the great bugbear in continuous gum work) is avoided.

This furnace is heated by a novel and very effective method of using ordinary petroleum or paraffin oil, such as is used for lamps. A, in Fig. 3 is the tank which is filled with oil by removing the screw plug E. The tap I is connected by the union C to the town water supply, to obtain the pressure necessary to work the burner. The guage D shows the pressure which may be at any point above 25 lbs. The greater the pressure the water produces on the oil the more powerfully the burner works. B, in Fig. 2 is the petroleum burner; it is connected to the lamp A by a small copper tube. K, is a coal gas burner for giving a preliminary heat to the petroleum

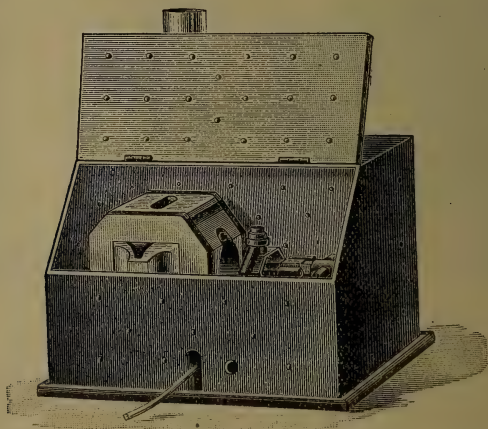


burner. The gas burner does this in about one minute, and the petroleum burner is then ready to start. This is done by opening the valve on tank and letting in the water. The oil is pressed through the copper tube (which may be any length) and through the passages of the burner. The heated metal turns the oil into vapour, which issuing through the two nozzles, with some force, burns with a blue flame, which is projected into the furnace around the muffle, by adjusting the valve I on the tank; the power of the flame is controlled instantly to work at any pressure desired, which is shown

by the pressure guage,—four or five lbs. pressure is sufficient to start with for heating up.

The work having previously been placed in the muffle on a nickel slide, when the muffle gets red hot, the valve I is opened wider, and the full pressure of the water supply may be used. About fifteen to twenty minutes is generally taken to fire a case, but it may take shorter or longer if desired. By opening the tap at the bottom of tank, water escapes and the pressure is instantly stopped, and the burner ceases working. If the furnace is red hot, the burner is instantly started again by closing the tap. It is as quickly done as switching on and off electricity.

The glass tube T on the side of the tank shews the quantity of oil in the tank which holds about a gallon, and will heat up the furnace to the baking point of porcelain, about 10 or 12 times, so that the cost for oil in baking a case is less than one penny.



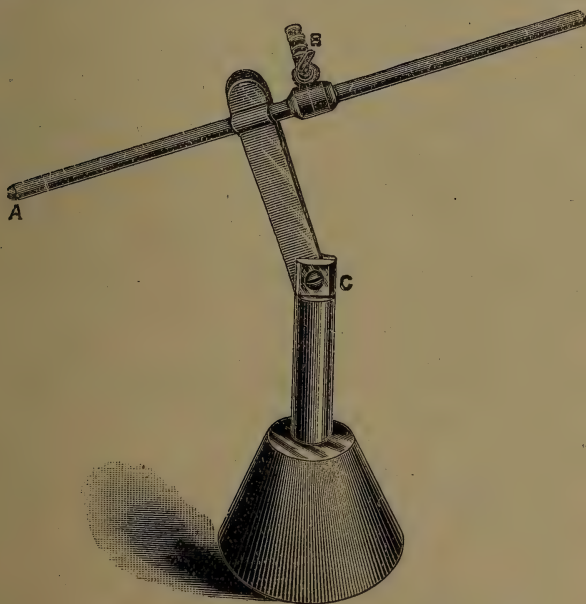
To show the power of the burner, ten lbs. of brass in a crucible furnace can be melted in half an hour starting cold. When the oil in tank is nearly used, the water is run off by opening the valve J and unscrewing the stop plug E. The tank can then be refilled with oil. Where water pressure cannot be obtained, or is not convenient, the tank A is fitted with an air pump which easily produces forty or fifty lbs pressure in half a minute, enough to bake one or two cases, and is as effective as water. The only consideration

being the work required in pumping, whereas with water it is only necessary to turn a tap.

The burner makes considerable noise, but not so great as when benzoline is used, and by placing the furnace in a hood of sheet iron and asbestos as shewn in Fig. 4, the noise is reduced to about half, and is not then objectionable, and there is no smell of the oil, etc.

The small furnace shown at F is for heating up work to be soldered with a blowpipe, such as an invested set of continuous gum teeth. The furnace (Fig. 2) is lifted off the stand and the furnace F put in its place, and the work heated with the petroleum burner to a red heat. The furnace is then removed by the handle to the work bench, and the set soldered with the oxygen blowpipe, the pieces of solder having previously been placed in position. A full upper set can be soldered by using oxygen in one minute.

Fig. 5 is an illustration of the oxygen blowpipe.



DISCUSSION.

The PRESIDENT said they had had a splendid demonstration by Mr. Gartrell on Continuous Gum Work, a subject of great interest to many of them. He wished to refer to the sim-

plicity and efficiency of the furnaces shown to them by Mr. Gartrell, who seemed to have brought continuous gum work within the range of the ordinary workroom mechanic. He was personally indebted to Mr. Gartrell for having placed in his hands the power to do continuous gum work so much easier than he had thought possible. The colours he obtained were very beautiful, and the method of obtaining them apparently quite simple.

Mr. HOUGHTON said he cordially agreed with all that the President had said. If he might venture to make a suggestion it would be to ask Mr. Gartrell if he could not see his way to affix a Pyrometer, or some other indicator, to the furnace, so that the working of the furnace would become simply a rule of thumb, and one could leave it to his assistant with perfect safety. Another question he should like to ask was whether the fusing points of the body and the enamel were the same. Another point was whether the perforated platinum was suitable for edentulous cases which were very much undercut. His experience was that perforated plates of dental alloy were apt to crack. He did not know whether perforated platinum was subject to the same defect. The colours shown them by Mr. Gartrell were simply perfection. One thing that had struck him was that in the work done by Mr. Gartrell there were no crazes. Perhaps the perforations in the platinum had something to do with that.

Mr. W. A. HOOTON said that although he had not gone in for the continuous gum work, yet it seemed to him, from what he had seen that evening, that it was only a matter of getting a furnace and making a few experiments to become quite familiar with the work.

Mr. PRITCHARD said he should like to know whether it was possible to use the ordinary teeth as supplied by Ash's and the Dental Manufacturing Company in Mr. Gartrell's furnaces.

Mr. GARTRELL, in reply, said in regard to Mr. Houghton's first question he always made the gum fuse at a little lower heat than the body. He also thought it was partly owing to the perforations in the plate allowing the body to get into it that was the cause of its non-crazing, but it is chiefly owing to the contraction of the gum enamel and body being equal. Checks take place when the gum enamel contracts more than the body. In repairing cases of continuous gum work he had found they were not so liable to "fly" as when done in the old-fashioned way. In the latter case the body some

times did not fuse properly, but shrank so as to form a little cavity which got filled with the fluids from the mouth. As soon as they began to heat the piece to repair it gas was formed, and the result was an explosion and injury to the piece. With a perforated plate that did not happen so often, as the fluids could escape on both sides of the plate. And, further, being held down closer to the plate there were not any vacancies in which the fluid could accumulate. In regard to Mr. Pritchard's question, he made the body so that any ordinary English teeth could be used. There were already pyrometers made for indicating high temperature, but they were very complicated and very expensive. The plan he had mentioned, namely, of placing a piece of pure gold in a nickel support in the muffle and waiting until it melted was a sufficient guide to show when the body was baked, but he does not use anything himself, and a pyrometer is unnecessary after a little experience. He did not find that Messrs. Ash's teeth altered their colour during the fusing of the body and gum enamel, as the baking heat is a little below pure gold.

He does not think it is altogether practicable to do without two bakings, either with his or any other body.

Mr. WHITTAKER: I should like to know whether Mr. Gartrell finds any difference in the fit when the plate has cooled down

Mr. GARTRELL said he did find at the first baking that the plate sometimes shrank, and that it had to be forced on the metal model. He did not use zinc models. He had a model metal of his own, composed of tin, copper, antimony, and zinc. This metal will shortly be for sale at the Dental Depots. There seemed to be no change after the second baking.

On the motion of Mr. PLANCK, who cordially welcomed Mr. Gartrell as a fellow West countryman, seconded by Mr. G. G. CAMPION, a hearty vote of thanks was accorded Mr. Gartrell for his interesting demonstration. The latter having suitably responded, the proceedings terminated.

GRATIFYING TO SMOKERS.—Professor Hajak, of Vienna, says smokers are less liable to diphtheria and other throat diseases than non-smokers in the ratio of one to twenty-eight. Dr. Schiff tells us that smoking is forbidden in bacteriological laboratories because it hinders the development of the bacteria.—*Medical Record*.

Dental News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

The following were the questions in the written portion of the recent examination.

Anatomy and Physiology and Surgery.

May 8, 1896. 2 to 4 o'clock, p.m.

N.B.—The Candidate is required to answer at least one of the two questions, both on Anatomy and Physiology, and on Surgery and Pathology.

Anatomy and Physiology.

1. Describe the Mucous Membrane investing the Tongue, and give its nerve supply.
2. Give the structure of a Salivary Gland, and describe the functions of Saliva.

Surgery and Pathology.

3. What are the causes, symptoms, and terminations of Acute Mandibular Osteitis?
4. Give the symptoms, diagnosis, and treatment of Epithelioma of the Tongue.

Dental Anatomy and Physiology and Dental Surgery.

5 to 8 o'clock, p.m.

N.B.—The Candidate is required to answer at least two of the three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Dental Anatomy and Physiology.

1. What is Prognathism, and how can it be demonstrated? Mention the bones concerned in its production?
2. How would you prepare a microscopical section from the Mandible of a child aged five years, showing the temporary incisor and its permanent successor *in situ*? Describe briefly the dental structures that could thus be demonstrated.
3. What are the processes by which room is made in the jaws for the erupting Permanent Teeth?

Dental Surgery and Pathology.

1. What are the chief causes of failure in crowning, and how are they best guarded against?

2. What are the microscopical appearances in acute inflammation of the Pulp? What changes take place during (1) resolution, (2) suppuration?

3. What are the respective values of the different Plastic Fillings? What are the component parts of each, and how are they prepared?

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The following were papers in the May examination for the License in Dentistry.

Dental Surgery and Pathology.

Examiners—Mr. Stack and Mr. Baker.

(All the questions to be attempted.)

1. Contrast the size, function, and importance of the tooth-pulp in the left upper permanent central incisor at the age of $7\frac{1}{2}$ years, and of 20 years.

2. What do you mean by the term 'dilaceration'? What teeth are most liable to be dilacerated? Contrast the upper and lower teeth with reference to their liability to dilaceration. Given one of the central permanent incisors just erupting at the age of 12 years, its cutting edge just appearing behind the line of the other incisors, on what other signs and symptoms would you rely to confirm your diagnosis of dilaceration?

3. Contrast the inner and outer surfaces of the enamel cap of the first upper permanent molar, especially with reference to the invasion of caries. Is there any communication between the dentine fibrils and the inner surface of the enamel?

Discuss the importance of filling every, the very minutest, perforation in the outer surface of the enamel.

4. Describe the signs and symptoms which would lead you to conclude that a patient was suffering from abscess of the antrum. What would be your treatment in such a case?

5. State how the third molar in the lower jaw may become impacted, and what might be the consequences of such a condition if unrelieved?

Dental Mechanics.

Examiners—Mr. Wall and Mr. Goldie.

(All the questions to be attempted.)

1. Explain the different methods of backing flat teeth.

2. Enumerate the different porcelain crowns used for pivoting.
3. How are cramps, used in soldering, made?
4. What are the physical changes wrought in gold by your alloying it with platinum?
5. In considering whether a multiple gap in the dental arch shall be best filled by (a) a plate, (b) by crowns, or (c) by bridge, what features are to be looked to in the choice of a device?

ACTION FOR MALPRAXIS.

At the Birmingham County Court, before his Honour Judge Whitehorne, Q.C., an action was brought by Samuel Darby, labourer, 12, Chestnut Place, Highgate Road, Birmingham, against Josiah Blackwell, chemist, 43, Bull Street, Birmingham, to recover damages for injuries sustained by the plaintiff through the unskilful treatment of the defendant's assistant while extracting a tooth. The case was tried by a jury. Mr. Vachell (instructed by Mr. A. Millward) appeared for the plaintiff, and Mr. H. Young (instructed by Mr. A. Turner) for the defendant.

Mr. Vachell, in opening the case, said that on the 24th June last year the defendant was suffering from toothache, and passing defendant's branch shop on the Moseley Road saw a notice in the window that teeth were extracted there. He went in and saw the defendant's assistant, who had the management of the shop. The assistant invited him to sit down in the usual chair, the instruments were produced, the locality of the tooth—a double tooth on the right hand side of the lower jaw—was indicated, and the assistant proceeded to work. He got hold of something with the forceps—apparently it was not the tooth, or if it was, there was a piece of the jaw with it—and a somewhat severe struggle took place, causing the plaintiff considerable pain. Ultimately there was a snap, and a piece of the tooth left the plaintiff's mouth. Plaintiff protested strongly against the treatment to which he had been subjected, and the assistant suggested that he should be allowed "to have another go." Plaintiff, however, thought he had had enough, and left the shop in agony. His face and neck were swollen, and on the following day he went to his club doctor, Dr. Mackay, and remained under his care for five weeks. Dr. Mackay satisfied himself that the chemist's

assistant, besides breaking off half the tooth, had also seriously splintered the bone of the lower jaw. On the 6th August, plaintiff went to the Queen's Hospital, and was treated as an out-patient for some time, during which several operations were performed. The injury that had been caused to the jaw set up necrosis, and pieces of the bone had to be removed. On the 15th January last the plaintiff, on the invitation of one of the prominent members of the hospital staff, became an in-patient, and remained there until the 28th January, when he left, but continued to attend as an out-patient until the 10th March, when he was told he was practically cured. He was not able to obtain work, however, until the 15th April. Plaintiff alleged that his pain and illness were caused through the assistant's negligence, and he claimed compensation not only for the loss of his wages during the 41½ weeks he was out of employment, but for the pain and suffering he had undergone.

Plaintiff, in his examination, said he paid the assistant 1s. to extract the tooth. The breaking of the tooth hurt him very much, and the assistant told him if the tooth was any worse he was to go again. Instead of going again he went to his club doctor. His wages in the summer averaged £1 9s. 3d. per week, and in the winter 24s. per week. He was unable to do any work during the time he was under the club doctor or an out-patient at the hospital.

In cross-examination, plaintiff said that when the assistant got hold of the tooth with the forceps he pulled some time before anything came out. When the tooth broke, the assistant advised him to go to a regular dentist and have the stump taken out under gas. He charged the assistant with being guilty of negligence.

Dr. Mackay said the plaintiff was under his care for five weeks. When he examined the plaintiff, he came to the conclusion that a piece of bone had been broken off, and that the remainder had become necrosed. Inflammation was set up, and plaintiff also had an abscess in the neck and another in the mouth, with a connection between the two. They had to be opened, and there was a discharge for a long time.

Cross-examined : The stump of the tooth was covered by the swelling of the gums.

Dr. Chapman, house surgeon at the Queen's Hospital during the time the plaintiff was a patient, said that when plaintiff first attended at the institution he had an abscess on the side of the neck, which also protruded into the mouth. The jaw

was so stiff it could not be thoroughly examined for about two months. Then a piece of loose and dead bone was found by the side of the lower jaw. The main part of the jaw was not necrosed, but the separate piece was. The damage done by the forceps might have accounted for what he saw.

In cross-examination witness said the most skilful man would occasionally break a tooth. The breaking of the crown of the tooth did not necessarily indicate negligence, and every man, even the most skilful, was liable to damage the alveolar margin of the jaw in removing a tooth.

Re-examined, witness said that in a case of alveolar fracture he would not expect to find the condition of things he found in plaintiff's jaw. What he saw, however, was either the result of disease or serious injury to the jaw through the negligent use of the forceps.

For the defence, Edward Bland Place, assistant to the defendant, said he managed the branch shop on the Moseley Road. He was a qualified chemist, and he frequently extracted teeth. The plaintiff's tooth was decayed, and he used the forceps in the ordinary way. He did not take hold of the jaw, but the tooth, the crown of which broke off. Teeth had broken before, but very seldom, and he did not suppose he broke one in 200. He recommended plaintiff to go to a dentist and have the stump extracted under gas. He did not ask plaintiff to let him "have another go." He did not tell plaintiff to go again if he was worse.

In cross-examination witness said he was an associate of the Pharmaceutical Society of Great Britain, but he had not been apprenticed to a dentist, and had not passed an examination in dentistry. He did not claim to be a dentist, but he was competent to extract teeth. He was apprenticed to his father, who was a chemist, and he had had fifteen years experience in his business. He had extracted teeth for several years, and since he had been with the defendant 200 teeth a year. He used the proper instrument when he operated on the plaintiff.

Charles Jevons Fowler, Newhall Street, consulting dentist at the Children's Hospital and late dental surgeon at the Dental Hospital, said he had known Place for six or seven years, and considered him a competent operator.

Mr. Young said his client sympathised with the plaintiff, but did not consider he was liable for the injury, because there was no evidence that it was actually caused by the negligence of the assistant. There was nothing to show the

assistant displayed incompetence or want of skill, and he contended that the injury was such as might have occurred under the most skilful hands that ever pulled out a tooth.

The jury returned a verdict for the defendant.

THE COST OF ARTIFICIAL TEETH.

HEAPHY v. TARR.

This was an action by Mr. G. E. Heaphy, a dentist, practising at Hastings, against Mr. William Henry Tarr, accountant's clerk, to recover £27, the balance of an account amounting to £42, for making a set of artificial teeth for a Miss Nesbitt to the defendant's order. The defendant was formerly Miss Nesbitt's trustee under a settlement. Mr. Lewis Glyn and Mr. Herbert Jacobs (instructed by Dr. Goodwin) were counsel for the plaintiff, and Mr. Drury (instructed by Mr. Letchford) appeared for the defendant. The defendant, it was said, had, in his capacity of trustee, given his sanction to the plaintiff extracting Miss Nesbitt's teeth, and making for her an artificial set. The plaintiff had made seven visits to the lady in London, and she had attended at his surgery at Hastings. Gas and chloroform had to be administered in the course of the extraction, and the plaintiff said his charge of 40 guineas, which had been agreed, was a fair and reasonable one. Mr. R. D. Pedley, dental surgeon, corroborated the plaintiff's statement as to the charge being a reasonable one. It was stated, on behalf of the plaintiff, that application had been made by the defendant and his co-trustee for an order for payment out of the trust funds of £75, prior to the services being rendered, which application was granted; but, notwithstanding that, the defendant had only paid £15 on account, and, as he refused to pay the balance, this action was brought. The teeth had not yet been delivered. The defendant denied that he agreed to pay a sum of 40 guineas for the teeth, and said that no money was ever obtained under the order of the Court of Chancery in consequence of his co-trustee's death and of the coming of age of Miss Nesbitt. Mr. Drury further argued that the defendant was not liable because, as was admitted, his co-trustee was not a party to the agreement even if it were made. He raised a number of other legal points, one being that under the statute of frauds the order ought to have been in writing.

The learned Judge allowed the case to go to the jury, however, and, in the result, a verdict was returned for the plaintiff for the amount claimed.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the April Examinations the following gentlemen passed the First Professional Examination for the Licence in Dental Surgery :— William Alexander Stewart, Perth ; Alfred William Wellings, Salop ; Alexander Ballantyne Mackenzie, Inverness ; Carl Lotinga, Newcastle ; Robert Charles Hillman, Ilkley ; Edwin Robert, South Shields ; James Irvine Wilson, Glasgow ; Victor Hippolyte Blane, Edinburgh ; Charles Nelson Park, Campbeltown ; George Herbert Harding, Liverpool ; Louis Anderson Dunn, Edinburgh ; William Henry Menmuir, Montrose ; Alfred Branson, Rotherham ; and Robert William Markam, London.

The following gentlemen having passed the Final Examination were admitted L.D.S. Edinburgh :— John William Edward Stewart, Dundee ; Herbert Percival Friend, Farnley ; John Morris Stewart, Edinburgh ; John Kirke Nash, Edinburgh ; Edward William Albert Jeffery, Hastings ; Robert Anderson Dickson, Glasgow ; Samuel Homer, Stourbridge ; Frederick Stephen Gregory, Edinburgh ; Charles Albert Lightfoot, Newcastle-on-Tyne ; Robert Jones, Pen y Bwlch ; Tom Tinley Tinley, Whitby ; and Archibald Roland Maclean, Portobello.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DENTAL EXAMINATION.

The following gentlemen having passed the necessary examination have been admitted Licentiates in Dental Surgery of the College :— Mr. E. C. H. Jessop (Oxford) ; Mr. A. D. Miller (Birmingham) ; Mr. F. Sievers (London) ; Mr. J. W. Turner (Birmingham) ; Mr. S. G. Yates (Ross.)

APPOINTMENTS.

Mr. C. S. Prideaux, L.D.S., R.C.S., has been appointed Honorary Surgeon Dentist to the Dorset County Hospital.

Mr. Ernst F. B. Beyer, L.D.S. Eng., has been appointed House Dental Surgeon to the Victoria Dental Hospital, Manchester.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Sir,—A short time since a circular was issued by the General Medical Council, and addressed to every member of the Medical and Dental professions, for the purpose, I take it, of preventing any qualified medical man or duly registered dentist by his presence or otherwise covering the responsibility of a non-registered practitioner in dentistry; either in the use of anæsthetics or the performance of any dental operation.

This is very proper, and done in the interest of the public, and to prevent incompetent quacks from treading on, what to them, must be very dangerous ground, and fraught with the most serious possible consequences.

It is in this spirit that I feel it my duty to acquaint you of the fact that a case has recently come under my notice where a qualified medical man has administered an anæsthetic to a patient for the purpose of a dental operation, and which operation was performed by an unregistered, and therefore unqualified, dental practitioner.

The action of the doctor in question is the more accentuated, from the fact that he is a neighbour of the man referred to, and probably passes his house daily; and it is quite impossible for him to shield himself under the plea of ignorance as to the man's qualification. The dental practitioner here alluded to, openly advertises his use of anæsthetics.

I am quite prepared if any action is contemplated being taken in these cases, of supplying names and all necessary details. I quite believe that this is by no means a solitary instance but only one case of many.

The law regulating the practice of dentistry is unfortunately only too inadequate, and that which is at present existing should therefore be most rigorously enforced. The public are most insufficiently protected against the untutored hand of the advertising quack and often suffer from the operations of men whom the law ought never to allow to practise a delicate, and what might be, a dangerous art, when carried on by those who have no credentials.

But the law at present is so framed as to permit a great grievance, and the public to be easily deceived.

There is nothing to prevent anyone, however unpractised and unskilful, to display a case of highly polished artificial teeth, to deceive one into the belief that they are dentists, and to practise without molestation in all branches of its art, to their own advantage, but the public detriment.

The legal existence of what can only be characterised as a body of moral impostors, is a disgrace to the dental world, and a danger to the community. Recent events have proved this. It has been openly demonstrated in our Law Courts, and it is high time some action was taken

by those in authority, to so amend the law, as to prevent the continued practice of a deception inimical to the best interests of the public, and derogatory to the art. In the meantime, I hope the Medical Council will be trusted to exercise their fullest power, in dealing with any cases over which they have any controlling force.

Faithfully yours,

G. W.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of March, 1895.

| | |
|---|------|
| Number of Patients attended | 1088 |
| Number of Extractions | 608 |
| Number of Extractions under Anæsthetics | 136 |
| Gold Stoppings | 205 |
| Other Stoppings | 265 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 80 |
| Crowns | 24 |
| Irregularities | 0 |
| Total | 2406 |

H. A. COLEMAN, J. THEAKSTON, *House Dental Surgeons.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
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FURTHER NOTES UPON AMALGAMS.*

By CHARLES S. TOMES, M.A., F.R.S.

In a former communication upon this subject, I pointed out that some advantages not otherwise obtainable were to be got by causing an amalgam to set with a rapidity which is so inconvenient as to almost preclude its employment in the more difficult class of cavities, and this difficulty of manipulation practically greatly diminished the usefulness of the method. I will only recapitulate what was then said so far as to mention that the good results as regards the ink test were got by the admixture of a certain proportion of old amalgam which had already set, but which was softened by heat and then rubbed up with the fresh mixture.

The idea of using old amalgams softened by heat was, as I have already mentioned, propounded by Dr. Otolengui, for finishing the surface of fillings, and as long ago as 1880, was mentioned for employment for the whole of a filling by Mr. Bodecker in a letter written to the *British Journal of Dental Science*, but it appears to have fallen stillborn.

With a view of rendering this or some similar method more generally available, I have since that time made a number of experiments, the results of which I propose to set forth this evening. If a little amalgam be mixed into a plastic condition and spread out in a thin layer upon a micro

* Read before the Odontological Society of Great Britain.

scopic slide, its surface can be examined by illumination from above, the best method being that by light reflected down through the object glass, by means of an inclined slip of glass in an attachment screwed on between the objective and the body of the microscope.* The bright surface will be seen to have a smeary semi-fluid appearance, with numerous spherical or hemispherical projections upon it which look like and doubtless are, beads of mercury. As time goes on these beads are found to have wholly disappeared, and their place is occupied by crystalline forms of metallic lustre. These crystals are sometimes cubes, sometimes six-sided, rhombs and, apparently, sometimes flat plates with six sides.

Thus it would appear that the process of setting of an amalgam is one of crystallisation, the metals being at first partly dissolved in the mercury, and then slowly forming with it a crystalline compound. And I found further that if a slide which had thus become crystalline be heated, the beaded appearance returns, just as some salts containing water of crystallisation will melt in their own water. But in this case (of amalgam which had once set) the crystals reappear in a few minutes, almost as soon as it has cooled. And I found also, that if a slide of freshly mixed amalgam be heated, the crystals appear at once instead of taking some hours to form: that is to say, that heat brought about the immediate setting of the amalgam, indeed as soon as it had cooled.

Three slides were then prepared, one with amalgam mixed so as to be just barely plastic, a second with more mercury, and a third mixed with a considerable excess of mercury, and

* Such an apparatus was formerly made by Powell and Lealand. The light is admitted through a hole on the fore face, into which it is condensed by a bull's eye. The definition (with powers up to 8 mm. or even higher) is not sensibly interfered with by looking through the inclined slip of glass, and the objective acting as its own condenser, the light is well focussed on the subject.

then squeezed till only just plastic, whilst the expressed mercury was squeezed flat under a coverglass on a fourth slide.

An examination of these slides showed no material difference in the size or appearance of the crystals formed, with the exception of the fourth, in which no rhombs appeared, but only foliaceous forms similar to those in which tin crystallises. This crystallisation is the reason why an amalgam ordinarily used gets a mat surface when it has set, though left with a burnish upon it.

And this crystallisation takes place not only on the free surface, but also on that which is intact with the slide; and as it occurs on all that surface of amalgam which is in apposition with the walls of a cavity, the setting of the amalgam renders the contact less perfect.

A careful examination of the slides indicates that the mass is wholly built up of crystals, and that they are for the most part rhombs of about $\frac{1}{800}$ to $\frac{1}{1200}$ of an inch in diameter, and about twice as long as they are wide; as many of them—in fact the majority—stand up on one end on the free surface, it has a sort of resemblance to a pavement epithelium, but it is also on a minute scale furry. The driest of the samples has not so lustrous a surface as the others, even the under surface which is in contact with the glass being less bright, and this is seen to be due to the presence of a certain amount of dull granular-looking material.

All these slides were prepared with Welch's amalgam, which was selected because it is one of simple and known composition, containing only silver and tin in known proportions—tin 51.52, silver 48.48, or nearly atomic proportions: and the tendency of thin slabs to curl up as they set, which has been described by several observers, could hardly be detected in any of them, they all remaining nearly flat.

The size of the crystals differs greatly in different amal-

gams ; thus in the case of Eckfeldt and Dubois' standard amalgam* they are about half the size of those in Weld's amalgam, and in the case of precipitated silver they are even smaller. In this connection it will be remembered that precipitated silver has long been known as forming an excellent filling, though it discolours the teeth greatly. It may be that this sprouting of crystals all over the surface is the cause of some amalgams which fail to show any expansion by the specific gravity test, nevertheless breaking glass tubes in which they are packed. But it must also be remembered that it is not certain that the crystals do sprout up ; it may be that the intermediate portions sink.

We have, perhaps, here an intelligible explanation of the addition of old amalgam reheated and mixed with fresh amalgam, causing very rapid setting of the whole. Not only does the old amalgam tend to recrystallise as soon as it cools, but it causes the new to do likewise. Just as a crystal dropped into a saturated solution of certain salts in water causes the immediate crystallisation of the whole, so apparently does the crystallisation of the old bring about that of the new. It remains to be seen what is the practical application of these facts. In the first place, with any freshly mixed and comparatively slowly setting amalgam, we cannot control the surface—it will become covered with small crystals, however smooth it may have been made at first. And though these crystals are very small, this roughening of the surface is not a change in the right direction. But these crystals are not dead hard ; as I pointed out in my former paper, if an amalgam setting with inconvenient rapidity be burnished in, its surface remains smooth and burnished, and retains, to a great extent, its burnish ; and if examined microscopically, the characteristic crystals can only to a very slight extent be

* Silver 52, tin 40·60, gold 4·40, copper 3 (from the "American System of Dental Surgery.")

discovered. So far, then, it must be right, only unfortunately it is so difficult to do. And here comes in the very interesting discovery of Dr. Black, which he terms the "flow" of amalgams. He found that by the steady pressure of a strong spring a foreign body could be squeezed into an amalgam which had set without any apparent breakage or crushing occurring. This I can confirm. The form in which I tried the experiment was to take a piece of platinum wire and squeeze that upon the mat surface of one of my fully-set amalgams, with the result that not only did a dimple appear, but on examining under a low power, the longitudinal striæ, due to the drawing down of the platinum wire, were exactly reproduced, and the crystalline structure had wholly disappeared in the bright pit. In other words the crystals are plastic, and the hard amalgam is capable of taking an impression of a degree of delicacy which it will not when fresh ; or, to speak more accurately, which it will neither take nor retain when fresh, so that here again is an argument in favour of the immediate setting.

But although "flow" of amalgam is a most interesting fact and differs from mere softness, such as that of lead, in that time is required and the result cannot be got by immediate pressure, yet I do not for a moment believe that it has, as supposed by Dr. Black, anything to do with the ultimate failure of amalgam fillings, for I doubt if the very intermittent pressure to which they are subjected would bring it about.

The crystallisation may have something to do with the brittleness of thin edges of amalgam, and those with the smallest crystals might be expected to be the strongest in this respect ; and it is an argument in favour of lining large cavities with phosphate cement, which always makes a water-tight fit.

And here let me add one word as to the composition of

amalgams. I believe that an enormous amount of experience in the hands of countless operators has been utterly wasted through our being content to use amalgams the composition of which is unknown to us ; for my own part, since I have been experimenting I have resolved to use no amalgam the composition of which is not known to me, and I think that the manufacturers would do well to always publish it on the bottles ; it is not as if it were a secret that could be kept, as it merely involves the expenditure of a little time and trouble to make an analysis, or the expenditure of a few shillings in getting it made for one.

Now to turn to actual practical manipulation. If a fresh mix of amalgam be put upon a hot plate, heated till it just begins to swell, it sets almost instantly, and can be used almost like fusible metal with a heated burnisher, being picked up by the cup end of the instrument ; this method is of use in finishing fillings, as they can be got perfectly hard by this means at once. But as a concession to the weakness of the flesh, some of the advantages of the use of an inconveniently rapidly setting amalgam can be got by adopting the following course. A little amalgam is mixed in the ordinary way and rubbed round the cavity. And here I may say that I strongly adhere to the opinion which I have expressed before in several places, namely, that if a fresh amalgam is to be used, there is no method which in its results approaches that advocated by Dr. Bonwill. This, which is or should be sufficiently well known, consists in squeezing the amalgam in the cavity, that is to say, using it fairly plastic, and forcibly squeezing out the excess of mercury by means of little pledgets of wool or bibulous paper. By this method, and by this alone, have I sometimes got quite watertight fillings with a fresh amalgam.

To return to our cavity. After the lining has been thus inserted and no great proportion of the total cavity filled

(and it does not much matter if it gets wet at this stage), a mix is made of the rapid setting amalgam, which can then be easily squeezed into that already in the cavity and rapidly burnished down as it sets. A very convenient way of managing this is to mix up some amalgam to a barely plastic condition, spread it out thin, and after it has set break it up in a mortar. This is mixed with an equal weight of fresh filings and kept in a bottle ready for use ; when required it is heated in a spoon till the mercury shows a little, and then quickly rubbed up with some more mercury.

This mixture does not set with such rapidity but that it may be fairly easily used alone.

In the case of the standard amalgam, the mixed filings require a little more than their own weight of mercury to make a convenient mix, and an altered form of the balance issued by Mr. Fletcher comes in conveniently for this purpose.

The amalgam already in the cavity is, if necessary, again dried, and perhaps some of it removed, and the rapidly setting mass packed in. In this way the practical difficulties are removed, and the results are very good, as the surface and edges all consist of the rapidly setting amalgam ; or the filling may be finished by using pieces of new amalgam picked up from a hot plate ; if it has set before you have done, heating the instruments, and heating each added piece renders it again plastic. The proportions given, I need hardly say, would vary for different amalgams, and as experience is gained less mercury, or a larger proportion of old amalgam can be used. It is of course only possible to set forth a general outline of the outcome of my experiments.

In conclusion, I would mention one or two pitfalls which may have discouraged some who have tried to follow the lines at first indicated. Unless the cavity be a simple one there is a danger, if every part be not thoroughly burnished ,

of leaving crumbly places in the amalgams, especially in undercuts.

Then, again, in using old pieces of amalgam there is an uncertainty as to their composition, and still more as to the quantity of mercury that they contain, which militates against constant results ; for this reason I advocate a specially prepared old amalgam. And it is possible—indeed most probable that different amalgams will respond best to different treatments, hence I have kept to one single kind.

For the intelligent use of amalgam I would bid you remember that amalgam even fully set has, as shown by Dr. Black, a certain sort of plasticity ; that in this state it takes moulds of exquisite precision ; that the nearer it is to its full setting the better your chances of attaining this excellence ; that heat resoftens it, and even to the extent of fluidity ; and that thus treated it sets again instantly.

I am only too well aware that these observations merely touch the fringe of the subject, and that the fact that amalgams crystallise has been, in a vague way, long supposed to be the case. But I do not think that any exact observations on their crystallisation are to be found on record. I have not as yet examined any amalgams which of themselves set with very great rapidity, and my only apology for submitting observations so incomplete, is that the subject is so large and so difficult that it may not be threshed out in our time, and the more observers there are at work the better the chances.

WALRUS' WHISKERS FOR TOOTHPICKS.—A new industry has been started in Alaska, the preparation and sale of walrus whiskers for toothpicks. When a walrus is killed, the natives pull out each separate hair. They are thoroughly dried, arranged in neat packages and exported to China, where they are much sought after by the upper classes.—*Invention.*

A CASE OF ANEURISM BY ANASTOMOSIS
INVOLVING THE VESSELS OF THE HARD
PALATE.*

By A. MARMADUKE SHEILD, M.B., F.R.C.S.

On the afternoon of Saturday, January 18, I was requested by Dr. Norton, of Queen Anne's Mansions, to see immediately a gentleman, whose condition was stated to be serious on account of persistent bleeding of an arterial character into the mouth. He was a retired officer, aged 57, and had suffered from "liver affections" but never from malaria. In 1893 he had an accidental fall "and broke his nose," and repeatedly has suffered from severe epistaxis, referred to the congested condition of his liver. On January 15 bleeding occurred into the mouth, and he lost about half a pint of bright blood. On January 16 the bleeding occurred again, and he lost two tablespoonfuls. On the 17th the bleeding again occurred to a considerable amount, and he noticed that the blood issued forth in jets into the mouth. On the 18th the same occurred. Dr. Norton saw him on the 16th, and noticed an ulcer the size of a threepenny piece on the left side of the hard palate, about opposite the second molar tooth and close to the alveolus. Arterial blood was spurting in a jet from the centre of this, and the patient was losing a quantity of blood, his mouth being filled with clot. Dr. Norton temporarily arrested the bleeding by pressure and perchloride of iron, but it always recurred.

When I saw him on the Saturday evening I noticed that he was pale and exsanguine, with a very weak pulse. The mucous membrane of the roof of the mouth was discoloured by the iron application, and a little clot could be seen on the base of a small superficial ulcer situated opposite the same molar tooth on the left side close to the alveolus. I feared to disturb this, and made a very gentle examination. I soon

* Communicated to the Odontological Society of Great Britain.

found that a pulsatile swelling the size of a filbert occupied the tissues at the base of the alveolar process. Its margins were not defined, but faded away imperceptibly. The pulsations were strong, so as to lift the examining finger, and felt exactly like those of an aneurism. There was one large pulsating vessel posteriorly, and this I could compress, but without altering the pulsation of the tumour. The teeth were quite sound, and the morbid swelling, whatever its nature, terminated abruptly at the base of the gums. The ulcer was quite superficial, and devoid of any induration or distinct margins; it looked like an accidental abrasion from hot food or a piece of bone. The patient was quite unable to give an exact account of the length of time the swelling had existed, and it seemed to me he had hardly much noticed its presence. There was nothing to be seen on inspection of the nares, and there was no bulging of the palate generally to indicate a protruding antral tumour. I directed that a nurse should be employed, with instructions to press upon the spot with a minute sponge soaked in turpentine, or with the finger, should bleeding recur. On reflecting upon the symptoms of this very unusual case, I was rather inclined to look upon it as an example of pulsating sarcomatous disease of the hard palate, yet the bone was not obviously expanded, and the pulsations were far more forcible than I have ever seen in several examples of this disease in the bones of the skull and the femur, ilium and tibia. The supposition of a definite aneurism of one of the palatine vessels also entered my mind, but I rejected it on account of the rarity of such a malady, and the rather diffuse outlines of the tumour.

Seeing the inevitable uncertainty of an exact diagnosis, the great hazard of cutting into, or cauterising the growth, and the desirability of definitely stopping the bleeding by some proceeding which would be sure and certain, I advised that a portion of the maxilla should be removed, so as to

ensure complete extirpation of the growth. The patient, who showed great sense and courage in his trying and dangerous position, at once acceded to what I thought best for his relief.

The operation was performed on Monday morning, January 20. Dr. Hewitt gave the anæsthetic, and Mr. Arthur Ward and Dr. Norton assisted me. The details of the operation are of no great consequence; it was performed with saw and cutting bone-forceps, the lip and side of the nose being incised, and the tissues reflected. There was no unusual bleeding. A portion of the upper jaw was removed, comprising the whole alveolar margin from the second incisor tooth, and the hard palate as far as the middle line. The posterior palatine artery spurted persistently, and was only restrained by plugging the canal with a spicule of wood. I would, however, draw special attention to the advantages of the lateral posture in all these operations, with the head well hanging over the edge of the table. Dr. Hewitt and myself have drawn attention in detail to its value in a recent paper published in the *Transactions of the Medico-Chirurgical Society*. After-oozing was checked by the application of a turpentine sponge, and a small sponge soaked in the same material was left in the cavity. The after-treatment of the case was left entirely in the hands of Dr. Norton, and recovery was uneventful. About two hours after the operation some more oozing came on, which was checked by full doses of ergot, and placing the feet in hot water. There was some little trouble in removing the turpentine sponge—as it clotted the blood and was firmly wedged. The horse-hair sutures were removed in a week, and union of the lip was proved firm and good, the cicatrix scarcely showing. All this time the mouth had constantly been kept flushed with benzoin and chlorinated soda mouth washes.

The highly vascular nature of the tumour was apparent

after removal of the portion of bone, for it subsided and contracted, so that what was once a prominent pulsating mass was now only a thickened flattened area of sponge-like tissue, with a small superficial ulcer in the centre. My colleague, Dr. Rolleston, examined the tissue microscopically, and his report fully bears out the appearances observed during life of hæmorrhage and free pulsation :—

“A section taken through the growth and ulcer down to the bone showed that underlying the granulation tissue, which was somewhat scanty, there were numerous blood vessels. The arteries were well formed and numerous; one or two showed slight endarteritis obliterans; there were a few large spaces lined with endothelium, and with but thin wall, probably dilated veins. All the blood channels seen, therefore, had proper walls, and there was no extravasation of blood into the tissues, and no pigmentation to suggest that any past extravasation had occurred. There was nothing to suggest sarcoma or epithelioma. From the small amount of organising granulation tissue, and from the absence of signs indicating irritation of the adjacent mucosa, it appears probable that the ulcer is of very recent date.”

So far as I have been able to ascertain these cases are exceedingly rare. They do not receive mention in the leading text-books in the articles on tumours on the jaws, and the only reference I have been able to find of anything of the kind is by the late Mr. Salter. Writing in Holmes' "System of Surgery" this authority proceeds as follows:—"The tissues about the necks of the teeth are obnoxious to the growth of vascular tumours, which vary from passive *nævus-like* swellings to those other forms of more arterial character—*aneurisms by anastomosis*. I have met with both forms of the disease."

Further on in the article Mr. Salter refers to a case somewhat resembling the one I have related, but differing from it

in the very important particular that the tumour was pedunculated and attached to the alveolar margin, yet I will ask the Society to note (1) how recurrent bleedings occurred from too incomplete attempts at removal, and (2) that the phenomena of pulsation was not observed.

“A rather severe instance,” writes Salter, “which occurred recently under my care manifested itself in the region that should have been occupied by the left lateral incisor of the upper jaw ; but as the laterals were wanting in this person, the tumour formed between the canine and central incisor. It had been about six months in reaching its then size, the dimensions of a large marble flattened on the surface ; it was easily compressed, but was elastic, and when pressed it became pale, exsanguine, and much reduced in size ; upon removing the pressure it resumed its previous aspect in a pulse or two. The surface of the growth was tolerably smooth, the base somewhat constricted, being about one-third less than the head of the tumour. The whole of the gums were very red, turgid and swollen, and the little tongues of gum between the necks of the teeth generally were enlarged and spongy. The patient had suffered no pain, but was conscious of a constant throbbing and pulsation. The most important symptom, however, was the hæmorrhage, which had latterly become a serious source of trouble and distress ; it usually occurred at night ; it would ooze from the mouth and stain the pillow and sheets, and sometimes trickle into the glottis and cause momentary suffocation.”

“The treatment which I first adopted in this case was determined by the very *arterial* character of the tumour. I attempted to destroy it by ligature ; a needle armed with a double thread was passed through its base, and each portion of the thread was tied so as to strangulate half of its attachment. The ligatures were tied tight, but did not cut through the substance of the growth. Their effect was for the time

to produce complete strangulation; the tumour was tense, and the blood could not be squeezed out of it by pressure. This plan did not ultimately succeed, for the size was not permanently diminished, and the circulation was re-established. I next removed the tumour by a very tight ligature, cutting it clean off; after this it returned as before, and I finally extirpated it with a scalpel, cutting freely inwards so as to remove a portion of the spongy vascular bone which seemed to form its basal axis. The bone at the base of these growths appears always to be very vascular and open in its texture. Considerable hæmorrhage followed the operation, which ceased under cold and pressure. For a few weeks the cicatrix furnished freely sprouting granulations; these were abundantly cauterised twice a week, and ultimately yielded a healthy scar. In structure this little mass when removed displayed a complicated vascular network, which, under the action of acetic acid, with the microscope, exhibited little else than an elaborate aggregation of the nuclei of blood-vessel muscle-cells. The surface was clothed with epithelium and papillæ, like the gum. I believe that no danger can arise in these cases from the use of the knife in at once extirpating the tumour; the bleeding may be profuse for a minute or two, but it soon ceases.

“I have seen a vascular tumour connected apparently with the periosteum of a loose molar tooth, in which the hæmorrhage was very severe, occurring also at night to an extent that was really alarming; the tumour was a tense pedunculated mass attached to the side of an upper molar tooth, half of the fang of which was naked. The extraction of the tooth brought away the tumour with it, which immediately shrivelled up to half its previous volume, and became soft and flabby.

“These tumours, as far as I have observed, occur in adult

and middle life ; they are perfectly innocent, and showing tendency to return when carefully eradicated."

In vol. v. of the *Pathological Society's Transactions* the same author alludes to a tumour of this nature, but it was pedunculated and therefore capable of more easy removal than in my case ; moreover it did not pulsate. It had existed for about twelve months, and was situated on the outer side of the left upper gum. When removed it was the size of a Morella cherry, lobulated and vascular. It was not ulcerated at any part. It gave trouble by repeated bleedings, which occurred spontaneously or whenever it was touched. For some few weeks before its removal it bled during the night in such large quantities that the patient was often awaked by the blood trickling into the glottis, her person and pillow being saturated with blood. Upon microscopical examination the tumour was found to consist of a congeries of numerous blood-vessels and connective tissue with no cells. Mr. Salter concludes that this was a vascular tumour *par excellence*, perhaps of the nature of nævus. The similarity of structure to my specimen is very striking. True aneurisms by anastomosis, from pulsatile angiomas, have been described as occurring in the long bones, and have been eradicated from the lower end of the femur or head of the tibia by gouging. I have never seen such a case. All the instances of pulsating tumours of bone I have seen and studied—and these have not been a few—have always contained sarcomatous structure, mixed with enormous blood sinuses and spaces lined with endothelium.

In a clinical lecture delivered at St. George's Hospital by the late Cæsar Hawkins, this eminent surgeon referred to the so-called aneurisms by anastomosis affecting the long bones, and referred to the case of Dupuytren, where the latter fruitlessly tied the femoral artery for this disease. Mr. Hawkins states his belief that all such tumours are really malignant in

nature, and are such as we should now call soft pulsatile sarcoma. "If, then," he writes, "you meet in practice with elastic tumours of the bones, some of which pulsate, you are, I think, to regard them as malignant, and instead of tying the artery, the influence of which at best is but temporary, you ought, if possible, to remove the affected part."*

In the end it becomes my duty to justify the treatment I adopted in this very interesting case, which may seem to many needlessly severe and extensive. In the first place, it was clear, that as the patient had already lost a serious amount of blood, any inefficient treatment like partial excision or the cautery might have been followed by recurrent bleeding, and this would have led to a serious, or even fatal, result. The records of one of Mr. Salter's cases amply prove the obstinacy of the bleeding when these growths are cut or pricked. Next there was the great uncertainty of the true nature of the swelling. The ill-defined margins and general infiltration of the parts induced me to believe that the tumour was of a sarcomatous nature, and the grave mistake of dealing with such tumours by partial operations is too clear to need demonstration before this Society. Of aneurism by anastomosis, which this tumour closely resembled, I have had sufficient experience on the auricle and in the scalp to be strongly impressed with the perils of cutting into the growth itself—and this is enhanced in the mouth, where bleeding is favoured by warmth and moisture, and prolonged pressure cannot be kept up. A free resection of this growth was in accordance with the soundest rules of surgery, never to cut into a vascular growth. There can be no doubt from the structure of the tumour, composed of a congeries of dilated vessels and sinuses, its ill-defined margins, and its violent strong pulsation, that we may rightly pronounce this case to be a definite instance of aneurism by anastomosis involving

* "Clinical Lectures," by Cæsar Hawkins, F.R.S., vol. ii.

the vessels of the hard palate, and I cannot give any reference to an exactly similar instance. Such cases are doubtless as rare as they are dangerous and difficult to treat. The prognosis is highly satisfactory, for the free removal, and the comparatively innocent structure of the tumour make recurrence improbable, and there is every hope that a definite cure is ensured.

ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 300.)

SYPHILITIC AFFECTIONS OF THE MOUTH.

The mouth may be affected in all three stages of syphilis.

Primary syphilitic sores are by no means rare upon the lips. They have also been observed upon the tongue, on the tonsil and on the gum. These erratic chancres are usually circular and distinctly elevated above the surrounding mucous membrane, and are often indurated; the neighbouring lymphatic glands are much enlarged and very hard, often forming a mass of considerable size in which the shape of the individual glands can be readily made out. Primary chancres in unusual situations often assume extraordinary characters which are so diverse as to admit of no terse description. In such cases the correct diagnosis is apt to be missed unless the possibility of syphilis is suggested; it is therefore a good rule in practice to suspect that any sore of peculiar appearance

and which defies diagnosis may be a primary chancre ; the diagnosis can then be easily confirmed by the co-existence or subsequent appearance of signs of secondary syphilis.

In secondary syphilis the most important lesions are the mucous tubercles or plaques and the ulcers to which they give rise. The favourite seats of mucous patches are the lips, angles of the mouth and edges of the tongue ; they are also seen on the cheeks, gums and hard and soft palate. The appearance of mucous patches varies considerably, and depends upon the amount of irritation or damage to which they are subjected by the teeth, etc. They are best seen in their unaltered condition on the dorsum of the tongue near the circumvallate papillæ or on the under surface of the tip. A typical mucous patch is round or oval in shape, of a greyish white colour, and raised above the level of the surrounding parts ; its border is sharply defined and usually somewhat sinuous or wavy. The surrounding mucous membrane presents a perfectly natural appearance. The surface of the patch may be quite smooth or it may be intersected by cracks or fissures ; sometimes it may assume a warty or cauliflower-like appearance. In situations where the patches are exposed to injury (for instance, on the edges of the tongue and the inside of the cheek near the teeth) the appearances differ greatly from those just described. The outline of the patch whilst roughly retaining its oval form becomes much more sinuous and is surrounded by a red areola about an eighth of an inch in breadth. The surface of the patch becomes ulcerated and grooved, or marked by alternate red and white lines. The entire tubercle is not usually destroyed, but the central part breaks down producing a sinuous ulcer surrounded by a pearly-white rounded smooth border. If the patient be in bad health, and if the irritation be continued the ulcer may extend and assume formidable dimensions. Mucous patches and ulcers may remain unaltered for a considerable

time unless efficiently treated, but they sometimes disappear spontaneously. They are usually sensitive and give rise to pain in eating, speaking, or smoking; there may be slight salivation, but an offensive odour is very seldom noticed.

In the tertiary stage of syphilis gummata may develop in various parts of the mouth; they are rare in the mucous membrane of the cheeks, and are hardly ever seen in the floor of the mouth, but they are fairly common on the hard palate, where they are particularly prone to break down into round or oval ulcers involving the bone, and leading to perforation (see Syphilitic Necrosis). Gummata are more often met with in the tongue than in any other part of the mouth; they may occur in the mucous membrane or in the muscular substance. When occurring in the former situation they are usually small and multiple, being about the size of a small shot or pea, and feeling hard to the touch and somewhat ill-defined in contour; the epithelium over them may be natural, or if they are very superficial, may be smooth owing to the papillæ getting rubbed off. So long as they are not irritated, they are painless and apt to escape notice, but when irritated they inflame and break down leaving small superficial ulcers. When numerous these ulcers may cover a large portion of the surface of the tongue, giving it a fissured and furrowed appearance; they are very chronic especially when inadequately treated. When they heal they pack the surface of the tongue causing great disfigurement.

The deep or parenchymatous gummata may occur in any part of the muscular substance of the tongue, but are nearly always found on the dorsum, especially near the centre. They may be quite small, or as large as a walnut. They produce rounded or oval tumours not very well defined, very indolent and causing little or no pain. As they mature they approach the surface and soften; the mucous membrane over

them becomes smooth and red, and eventually perforated by a small circular aperture which quickly enlarges by melting away of its edges until a deep cavity with ragged sloughy sides is exposed. The size of the ulcer is only fully appreciated when its sides are separated by the finger.

The *treatment* of syphilitic affections of the mouth necessitates the administration of internal remedies suitable to the stage at which the disease has arrived. In primary and early secondary syphilis a course of mercury must be prescribed; one of the most satisfactory preparations is the hydrarg. cum creta in doses of $2\frac{1}{2}$ grains three times a day. In cases of late secondary or early tertiary syphilis the administration of mercury must depend upon the severity of the disease, the presence or absence of syphilitic manifestations in other parts of the body, and the amount of mercury the patient has already taken in the earlier stages. In tertiary affections iodide of potassium is essential. It should be given at first in doses of 5 grains thrice daily, the amount being gradually increased up to 30 grains three times a day, or until the desired effect is produced. In early tertiary syphilis, especially when there is doubt as to the previous administration of mercury, this drug may be advantageously combined with the iodide.

Local treatment is of more importance and attended with greater success in secondary than in tertiary affections. Mucous patches and ulcers should be painted three or four times a day with a camel-hair brush dipped in a solution of ten grains of chromic acid to one ounce of water. Under this treatment they usually disappear in a week or ten days. Various local remedies may be used for tertiary ulcers, but it is not possible to predict which one will prove most useful; each must be tried until the most suitable is discovered. The following are those in common use:—nitrate of silver, alum, sulphate of copper, bichyanide of mercury, honey and

borax, chlorate of potassium, tannic acid, and Mandl's solution (Pot. Iod. grs. 30, iodine pur. grs. 5, acid carbol. grs. 5, glycerine ʒi).

It is important that all sources of irritation should be removed as far as possible. The food should be plain and unirritating, smoking should be given up, and alcohol used but sparingly and well diluted. The condition of the teeth should be carefully attended to, and the wearing of artificial dentures suspended.

Lastly, it is of great importance to remember that primary and secondary affections of the mouth are highly contagious. Many cases are on record of syphilis conveyed from person to person either by direct contact or indirectly by means of instruments, drinking vessels, etc.; dentists have acquired syphilis by scratching the finger on the teeth of persons suffering from the disease. It is therefore very important that patients should be cautioned as to the risk of infecting others, and that dentists and others operating on the mouths of infected persons should be scrupulously careful in disinfecting their hands and instruments.

TUBERCULAR AFFECTIONS OF THE MOUTH.

Tubercular disease of the mouth is comparatively very rare. It may affect the tongue, the cheeks or the hard and soft palate. The tongue is the part most frequently, and often exclusively, affected. The disease may be *primary* or *secondary*. Primary tubercular ulcers of the tongue are very rare indeed, but ulceration secondary to tubercular affections of the lungs and larynx are much more common. Tubercular ulcers of the tongue may commence by the breaking of a small vesicle, by the formation of a small yellow point or patch, or in an abrasion caused by rubbing of the teeth. They may occur on any part of the tongue, but are most

often seen on the tip and borders. The fully developed ulcer has no characteristic shape ; it is usually roughly oval with sinuous borders, uneven pale granulated surface covered with a dirty yellow viscid mucus, and sharply cut or bevelled edges. The ulcer is sometimes surrounded by a number of very small greyish-yellow points, or elevations, or, if they have broken down, minute ulcers.

The ulcer is at first not very painful, but as the disease advances it becomes more and more painful and sensitive to touch. Salivation is well marked in the later stages. As time goes on the sore increases, and the patient's strength fails. Sloughing may occur. The glands under the jaw are often, but not always, enlarged. The natural termination of the disease is death from exhaustion and pulmonary disease. Occasionally a tubercular ulcer heals, at any rate temporarily.

Treatment. Primary tubercular ulcers should be excised whilst they are still small, and if possible before they have infected surrounding parts. In such cases there is a possibility of a permanently good result. Even in secondary tubercular ulcer excision may be practised, if it is of small size and the patient in sufficiently good condition to stand the operation. In such cases the operation is advised not with a view to cure, but to save the great suffering which the ulcer itself causes. The cautery is sometimes used for the removal of these ulcers, but it has no advantage over the use of scissors.

In cases unsuitable for operation great care should be taken to remove all sources of irritation, and mastication must be rendered as easy as possible by due selection and preparation of the food. It is sometimes even necessary to resort to the use of nutrient enemata, owing to extreme pain in taking food by the mouth. All local applications should be non-irritating. Most benefit will result from the use of cocaine painted on the surface of the ulcer, or of a powder composed of iodoform (gr. i.), borax (gr. iii.) and morphia (gr. $\frac{1}{2}$)

blown upon its surface after cleansing with absorbent cotton wool.

The constitutional treatment resembles that of other tubercular affections.

(To be continued.)

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 396.)

HOW TO CONSTRUCT AN UPPER SUCTION PLATE.

These cases should not be undertaken without due precautions. It is not every mouth that is suitable for such a plate, and before venturing on making one, it is safest to swage up a German silver, or gilding metal trial plate, in order to ascertain if the result is likely to be satisfactory.

Having obtained the zinc dies and counter dies, we next proceed to cut out the lead pattern, taking care to bring it well over the alveolar ridge on the buccal and labial aspects of the model, for the amount of suction or stability of the case depends materially on the plate being brought high up in these regions.

The plate should be of No. 8 guage, and be annealed before being cut out to the pattern.

After cutting out the plate and filing the edges smooth, it should be again annealed, and it may then be beaten somewhat into shape on the wooden block (Fig. 12). After getting the ridge well defined in this way, the plate may be beaten well up in the palate in the zinc model, with the horn mallet, and from this time to the finish it should be pickled and annealed after each swaging. A very good way to force the plate home in the palate, is to use a thick boss of lead, conforming to the shape of the palate, and with it drive the plate up in the palate with a hammer. Or a brass punch

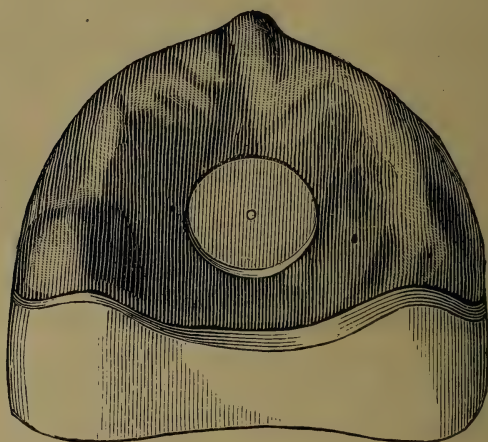


Fig. 27.

may be used, interposing between it and the plate a thick piece of sheet lead ; this is to avoid the risk of bruising the plate.

When the plate has been driven well home in the palate, it may be placed in the counter die, placing between it and the counter one or two thicknesses of paper ; this allows it to part readily from the lead.

We may now give the zinc die about half a dozen heavy blows on the swaging block.

After removing the plate from the counter die, we place it on the zinc die, and on examination may find that it has several buckles, (that is a doubling together of the plate), in front; these must be beaten out either with the horn mallet or a broad ended punch. To avoid the spreading of the plate, consequent on flattening these buckles, it is usual to make a cut into the plate at one or two points with a fret saw, this will allow the divided edges of the plate to overlap, and thus contract it so as to lie close to the model. If the plate is pierced with the saw neatly, and on the slant, and the edges bevelled, the plate can be soldered up without showing a join.

After this operation, the plate should be placed on the best zinc die, to receive three or four heavy blows in the lead counter, and made to fit the zinc model; when this is assured, we may clean the plate and try it on the plaster model.

Now, although we may find that it fits the zinc model accurately, it is a very tight fit, or binds on the plaster model.

This is accounted for by the fact that there has been some considerable contraction in the zinc die, and it is as well under these circumstances to try the plate in the mouth, when in nine cases out of ten the tightness of the fit will be found advantageous rather than otherwise, the mucous membrane of the mouth, (not like the hard plaster model), yielding sufficiently to allow the plate to go well home.

If this fact is proved after trying the plate in, then we can pare a little away from where it binds on the plaster model, in order to let it up into its place. If we find, however, that the pressure on the alveolar border is too great, it will be necessary to pad the zinc model with a little brown paper or pattern lead, and after carefully annealing the plate, to place it on the zinc die, taking care not to displace the pads. It

must now receive three or four heavy blows in the counter and be tried on the model again.

At this stage of the work, while we are ascertaining the fit of the plate, it is as well to get the correct articulation of the mouth or "bite." To do this it will be necessary to soften some composition, not wax, that being a material much too easily altered in form, then form it into a roll and adapt it neatly to the ridge of the plate. To secure it firmly, dry the composition, if it should be wet, and make the plate sufficiently hot that the material used will melt on it, then cool, and trim up as near as possible.

It will now be necessary to try it in the mouth, when perhaps it will be found that the contact is only in the molar region; so we must trim some of the composition away, in order to get it to touch all round equally. We may now slightly soften the surface of the composition corresponding to the position of front teeth, leaving the molar region hard, then replace in the mouth and get the patient to close the teeth again. We must take notice that the proper length of the face is preserved, also that the lips can close without any strain, we must also build out the composition to the extent necessary to produce the proper contour of the lips, as this will be the guide as to the length and projection of the teeth and also the centre of the mouth. We may now slightly warm the surface of the composition in the molar region, so as to correctly adapt the opposing surfaces, then we may finally finish off by slightly softening the front portion of the composition to allow the front lower teeth to bite in a little deeper. By these means one is enabled to get the bite stronger at the sides of the mouth than in front, and so add very greatly to the utility of the case.

We may, of course, if found necessary after trimming the composition bite to its proper depth, place a thin layer of soft composition on its surface, and get the patient to close the

teeth firmly, by this means we get a correct representation of the points of the opposing teeth, without taking a regular impression of them, as in the first case, the hard composition at the same time preventing the bite from being made any shallower.

As the bite is nearing its perfect stage the adhesion of the plate to the roof of the mouth ought to become more and more apparent, and this operation should conclusively demonstrate the success or otherwise of the future case. We have found in obtaining the "bite" that the patient should, preferably, sit perfectly upright and with the chin slightly depressed, this prevents greatly the protrusion of the lower jaw, which is a very common occurrence, and the student should take notice that the patient cannot bite too far backwards, but can do so forwards with the greatest facility.

VARIOUS METHODS FOR PREPARING A SUCTION CHAMBER.

When the plate has been swaged up so that it fits the plaster model, the shape and size of the intended chamber is marked out on it, and a series of holes drilled within the circumference of this outlined space. Now if we unfasten one end of a fret saw from the frame and pass it through one of these holes, and then adjust it to the frame again, we shall be enabled by using the saw carefully to cut out a circular or other shaped piece from the plate with the greatest facility.

After the edges of the plate have been made symmetrical, a lead or rubber pattern of the depth required is fitted inside the space (Fig. 27). A small piece of composition may now be softened and pressed on to the surface of the plate and raised disc, after previously dusting the latter with French chalk. We next attach the composition to the plate by a little hard wax, and then remove the plate from the model.

We now take away the disc, and into the cavity left by its withdrawal, plaster of Paris is poured, and built up so as to form a model for a zinc die, (Fig. 28). To this plate a lead

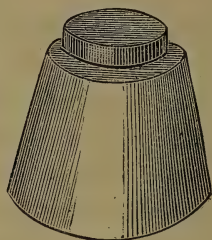


Fig. 28.

counter is made, and a piece of No. 7 plate, Ash's guage is struck up to it, so as to produce a perfect chamber; this when trimmed up, is fitted within the cavity in the plate, to which it is next attached by hard wax, and afterwards sunk in an investment of brickdust and plaster to be soldered to the plate. The edges of plate and chamber are now brushed with a solution of borax, and very small pieces of No. 2 solder placed close together around the join. The case is then heated up and the solder nicely flushed.

By leaving the edges of the chamber projecting slightly through the plate on its superior palatal or upper aspect, we are enabled to have the edges of the chamber exercise some slight amount of pressure on the palate if found necessary, and produce a more perfect vacuum.

When no pressure is required to be exercised on the palate a suction chamber may be made as follows. Outline shape on gold plate after swaging process is finished, drill holes around as previously described, and cut out the plate to the shape required, then having trimmed the edges, the plate is placed upon the plaster model (Fig. 27) and a piece of lead, or tin, of the proper thickness is fitted into the cavity, and to the

model, to which it has next to be cemented by hard wax. A cast is now taken in sand of the model with the plate in position and a zinc die and lead counterdie obtained. These are to swage up a piece of No 7 plate so as to cover over the disc of metal and rest on the plate, to which it has afterwards to be fastened, invested and soldered as described previously.

Another method, but not so artistic, is to form a suction chamber in the plate as it is being swaged up. To accomplish this it is necessary to adjust to the palate of the plaster model a tin, lead, or rubber pattern of the same shape as the chamber required.

From the model with the pattern attached, a die and counterdie are obtained, and the plate is swaged as previously described; it must be carefully chased around the suction chamber, so as to make it as sharp as possible.

The objection to a suction chamber formed in this manner, is that the edges of the chamber cannot be made sufficiently sharp to press against the palate to produce the necessary vacuum.

It is however, necessary in most cases, to take the pressure off the centre of the hard palate, even if we do not contemplate a regular suction chamber. This may be done by placing one or two thickness of pattern lead, or thick tin foil, over the ridge in the centre of the palate extending backwards to within a quarter of an inch of the posterior border of the plate. If this precaution is not taken the plate may, after being worn some time, and having sunk slightly into the soft gum, be found to rock from side to side owing to undue pressure in this region where the gum is thinner and harder.

The shape most suitable for this purpose is a narrow heart or lozenge shaped piece of metal the apex coming well forwards

and the base extending to within a quarter of an inch of the posterior border of the plate.

There are other methods of increasing the suction of a gold plate; one is to carefully outline the extent of the plate on the plaster model prior to casting the zinc dies, and carefully scrape the model so that the edge of the plate when swaged must press slightly into the soft mucous membrane.

Another method is to draw some platinum wire as fine as a thread, and solder it around, and within the circumference of the plate to produce those linear markings mentioned before in relation to vulcanite work. This if neatly done increases materially the suction of a case and adds to its stability.

(To be continued.)

GOLD USED IN DENTISTRY.—*Tit Bits* informs us that a dentist in good practice uses over £100 worth of gold a year in filling teeth. Some prepare their own gold; others get it from the gold-beaters; but the greater part obtain it from dental supply firms. This gold is put up in 8oz. packages, packed in small glass phials, each containing a fraction of an ounce. The cylindrical pieces of gold in it are gold-foil of a very soft and spongy kind. When pressed into a hollow tooth, one of these cylinders will not take up one-twentieth of the space occupied in the bottle. About £800,000 is now concealed in the mouths of the people in these islands. We wonder how these figures are arrived at.

British Journal of Dental Science.

LONDON, JUNE 15, 1896.

LEGAL QUACKERY.

It has been our duty from time to time to call the attention of Dentists to the lamentable state of the law which legalizes quackery. As occasion offered, we have referred to some incident of a more or less public nature, and when taking it as a text for our remarks have often wished that they might reach a wider circle than our professional readers. But the difficulty of the profession educating the public thoroughly upon the question of quackery depends upon several factors. Many people refuse to be interested in the matter. They are not ill themselves and the majority of their relatives are for the moment in robust health ; there is not sufficient urgency to cause the question to rank with the ordinary selfish items of the every-day working programme. Then again an easy confidence in State control leads other individuals to imagine that if the authorities do not interfere with unqualified practitioners there cannot be anything very bad about such licence, and that the hints or recommendations of anyone who by his own assertion is "better than they" must be accepted with reservation as coming from an interested member of a trade-union or would-be close corporation.

In the hope that some slight impression might be made upon this callous public, we were glad to find in *The Times* the other morning a leading article which might well have been inspired by reading up the back numbers of our own JOURNAL. If prominent articles in the leading organ are of any avail then this one should do something to open the eyes of the public and prepare the way for a better state of things. A recital of the facts of the recent death under chloroform at the hands of a "herbalist and a maker of

imitation teeth," enabled the writer to quote Mr. JUSTICE WRIGHT who "called attention to the dangerous results that might arise from allowing ignorant persons to use and practise a skilled profession." The leading article also points out the different view taken by most foreign States and in some of our own Colonies. The law allows free practice, but permits the use of a professional title only by the qualified men, and the article draws attention to the means which can be taken by a person who has been punished for a false assumption of such title, to prevent a repetition of such an awkward interruption. *The Times* says that there are other important points in which the statutes, regulating the rights and duties of medical men, surgeons, dentists, apothecaries, and others urgently need amendment, and all of us will agree that "it is for the public themselves to decide whether society ought to remain practically without defence in the face of such perils to life and limb."

As will be seen in our correspondence column Mr. HENRY BLANDY has some suggestions to offer which we do not now discuss. We have sometimes been accused of writing in too optimistic a tone by those who consider that everything comes to those who wait. But it is just possible that the public mind may become awakened by judicious nudging, and if no rash propositions for fresh legislation are made it might perchance be found that a strong Government, in search of a really practical and useful domestic Bill, might be inclined to look in the direction of an Amendment of the Medical Acts. We have previously pointed out that the Legislature must never be expected to prohibit the rendering of free assistance or aid by one individual of the community to another, but we venture to think that when the favourable moment arrives an effort should be made to prevent the practice of any of the scientific professions by any person who accepts fee or reward excepting those who by a recognised curriculum, examination, and registration are justifiably enabled to offer their services as experts. The advantages exemplified by modern preventive medicine, and the submission of the public to such ordinances as Compulsory

Notification lead one to think that sooner or later an extension of such beneficial principles may be possible in spite of those (then in the minority) who now are ever ready to shriek about grandmotherly legislation and to extol the value of the legal maxim "Caveat emptor."

HÆMORRHAGE AND THE BAROMETER.—Dr. Whitelaw draws attention in the *British Medical Journal* to the relation existing between hæmorrhage and barometrical pressure. The coincidence of a high barometer with a great development of cholera has often been remarked, although there are striking exceptions. Dr. Whitelaw's attention was first drawn to the subject by the repeated coincidence of "colliery warnings" with urgent summons to attend patients attacked with hæmorrhage from the lungs. From the observations he has made from time to time during the past few years, he has come to the conclusion that there is a marked affinity between a high barometer and hæmorrhages of various kinds. The cases recorded are, hæmoptysis, resumption of menstruation after amenorrhœa, subcutaneous hæmorrhage, cerebral and intestinal hæmorrhages, and hæmorrhage of pregnancy. All these are ruptures of blood vessels presumably in an unhealthy condition, and so differ from a surgical hæmorrhage like that from tooth extraction, but it might be worth while taking the atmospheric pressure into account before operating upon a known bleeder. It would be interesting to know if any of our readers have any such coincidence on record.

SUGAR AS A FOOD.—Dr Vaughan Harley praises the virtues of sugar as a food, and denies some of the vices generally ascribed to this substance. The popular view that sugar ruins the teeth is not borne out by his observation. He says that people accustomed to take large quantities of sugar are not more liable to have bad teeth than their more

abstemious neighbours, but on the contrary have in many cases exceptionally fine ones. In support of this contention, Dr. Harley cites the negroes of the West Indies, "who are in the habit of taking large quantities of sugar, and whose teeth are unexcelled as to soundness and whiteness." There is no doubt that the popular idea about sugar being bad for the teeth, is partly accounted for by the fact that sweet things cause pain to a carious tooth, yet the bad teeth of sugar boilers, confectioners and bakers have often been commented upon, and must be more than a coincidence. We are rather inclined to think that the unhealthy life of these workers, combined, in the case of bakers, with the influence of flour—which being deposited on the teeth becomes changed first into glucose and then into acid—has much to answer for. On the other hand it may well be argued that the West Indian negro, having sound teeth by heredity, being uninfluenced to any great extent by civilization, and by leading a natural life, has good teeth *in spite of* the sugar he may eat.

THE TOOTH IN POETRY.—The aching tooth cannot complain of being neglected by the Poet. We are all familiar with the well-known lines of Burns, while other bards of lesser fame have taken the same painful experience for their theme. The latest poem upon this subject appears in *Items of Interest*, and is entitled "An Ode to Misery." The bard asks in despair:—

" Oh, where can peace be found,
When aching teeth abound
To give me hell?
Yes, pain of hell I feel,
And fiends of hell now steal
Within, and make appeal
My life to sell!

Oh quickly give relief,
Or in my hellish grief
I shall be lost—

Evidently his life is in danger. The toothache to an ordinary mortal is not usually fatal, but we presume that

the highly sensitive frame of a Minor Poet is soon undermined. But relief is at hand!

I see an angel coming!
It is a dentist running
To scare away this humming
Of hell's dread host!

The rhyme is not good, but the sentiment must appeal to every dentist. Who can resist being called an angel? We presume the "humming" is *tinnitus aurium* which often accompanies neuralgia, or the drugs used to combat it!

DENTAL EDUCATION IN THE UNITED STATES.—The members of the dental profession of the United States have been engaged for some years past in the effort to elevate the standard of dental education by improving and unifying the requirements and curriculum of all the dental colleges in the country. As one means to this end two bodies have been formed, the National Association of Dental Faculties and the National Association of Dental Examiners, composed respectively of delegates from dental faculties and from State Boards of dental examiners, and meeting annually. They have already done much good and are steadily accomplishing the object of their organization.

THE TEETH OF HORSES.—*Invention* says the teeth of horses, despite their solidity, decay rapidly if they once start. The instruments for the extraction of horses' teeth do not materially differ except in size from those used upon human beings. Oddly enough, it is not often that a horse has to be especially tied for the operation. It sometimes happens that the root of a decayed tooth will cause trouble to a horse, which can only be relieved by extraction, and cannot be reached by the forceps. Sometimes in this case the operation of trephining is performed. In the particular case we refer to, the root was situated in the lower jaw. A

hole was bored from under the jaw bone to the root of the tooth. An instrument was then inserted into the cavity, a smart tap with a hammer, and the offending root was expelled. The animal was soon well again and able to do its work without the aggravation of toothache. Among the more valuable horses the filling of decayed teeth is extensively practised. The filling material is a silver amalgam packed tight by means of tamping tools and a mallet in precisely the same manner as with humans.

A THIRD SET OF TEETH?—The *Glasgow Evening Times* is responsible for the statement that a respected Bothwell lady who has reached the age of 87 years has just developed her third set of natural teeth. Three upper and three lower teeth have made their welcome appearance in the front of her mouth. No authenticated case of a third dentition has ever been found in man, though the evidences in favour of a post-permanent dentition amongst the mammalia are now very strong. These "third sets" are generally accounted for by the eruption of hitherto suppressed teeth late in life, supernumeraries, wisdom and canine teeth. If any of our readers are able to investigate and report upon this case we, should be very glad.

DEATH FOLLOWING EXTRACTION.—We drew attention lately to a sudden death from syncope following tooth extraction. We now quote a case from Sydney in which a middle-aged man was seized with paralysis immediately after having a tooth drawn, and died the next day. Another case reaches us from St. Bartholomew's Hospital in which the patient, a girl of fourteen and a half died the day after having a tooth out under gas. The autopsy showed that death was due to inflammation of the brain of very rapid development. The general belief was that the inflammation was not set up by the tooth, but there was absolutely nothing to show any other cause.

Review.

On Extraction, with Notes on the Anatomy and Physiology of the Teeth, for Medical Students. By W. D. Woodburn. London: Bailliere, Tindall & Cox. 1896.

As this work is written for Medical Students, presumably to assist them when undergoing their training as dresser, or assistant, to the Dental Surgeon at their general Hospital, it naturally does not go very deeply into the Anatomy and Physiology of the Teeth. Yet the main facts are given in a clear and assimilable manner, accompanied by several woodcuts.

The bulk of the work is devoted to explanation of the methods of extracting the various teeth, and although Mr. Woodburn's methods may not all be followed on this side of the Tweed, yet it is easy to see that in his hands they are successful. After all, it is not so much the instrument, as the man who uses it. For instance, the author stands up for the key in certain cases. No doubt in Mr. Woodburn's hands the key is safe and efficacious, but we hardly think it would be as safe in the hands of medical students in the out-patient department.

Five pairs of forceps are given as the minimum number. We give them in brief as lower straight stumps, lower straight molars, straight upper incisors, and one each for right and left upper molars. We think that if an upper bicuspid pair of forceps were substituted for the straight pair, it would be an improvement, as incisors and canines can be removed just as well (if not better) by the former, while there is less chance of bruising the lower lip against the lower teeth, especially in gas cases. Mr. Woodburn seems to give the preference to "straight" lower stumps and molar forceps over the "hawk's bill" pattern. We certainly think the latter instrument the better, for the following reasons, namely, greater power, greater facility for seeing the tooth or stump operated upon, and less risk of jumping up, and damaging the upper teeth. The directions for guarding the alveolar process and the gullet with the fingers of the left hand are not dwelt upon in the way we should have liked, and we think that the directions for steadying the left hand by resting the fingers on the patient's face are unnecessary

and objectionable to the patient, especially if it be a lady. The elevator recommended is a right and left double-ended one. The advantage of this is, of course, that there is no occasion to change the instrument, but no force can be obtained by placing the butt end against the hollow of the hand as in the case of the single elevator. The remarks on tooth-saving are much needed and excellent, and the general tone of the work practical and common-sense. The photographs are most realistic, and the book is printed in a manner worthy of its publishers. We have no doubt that slight errors, such as "a forcep," and the frequent use of the word "alveolus" instead of "alveolar process" will be rectified in a future edition.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, April 13, 1896. Mr. David Hepburn, L.D.S.Eng., President, in the Chair.

The Secretary read the Minutes of the last meeting, which were confirmed.

The following nomination is before the Council of the Society :—Robert Stephen Fairbank, M.R.C.S.Eng., L.S.A. Lond., 18, George Street, Hanover Square, W.

The following gentleman having signed the required obligation form, was admitted a member of the Society :—Harold Dewe Matthews, Grove Field Villa, Cheltenham.

The following gentleman having signed the obligation book, was admitted to membership of the Society by the President :—E. L. Dudley, L.D.S.Eng.

The following gentleman was proposed for a non-resident member of the Society :—Charles Sidney Prideaux, L.D.S. Eng.

The following gentlemen were elected non-resident mem-

bers of the Society :—George Henry Bowden, L.D.S.Eng. and Glasg., Roseneath, Reigate, Surrey ; T. Rubery Chambers, L.D.S.Eng., New Inn Hall Street, Oxford.

The Librarian reported the receipt of *The Annual Report of the Smithsonian Institution*, July, 1893, and "The Jack Rabbits of the United States," in addition to the usual periodicals and exchanges.

[The Librarian will be glad if members will kindly inform him of any changes of addresses, or additional qualifications, so that the new List of Members, to be published after the annual meeting, may be as accurate as possible.

The Curator ; I have here, sir, two specimens of old bone work presented by Mr. W. F. Forsyth. One is a very beautiful example of the insertion of natural teeth in front of the case. In the other specimen, instead of natural teeth, tube teeth are inserted, and two pins at the sides show that swivels had been used.

Mr. Forsyth has also presented an ancient instrument for the extraction of teeth. It looks, at first, a very clumsy piece of work, but on careful examination it will be seen that it is a very ingeniously constructed piece of mechanism. By closing the handles the buccal blade of the forceps is driven forward for a certain distance, and firmly grasps the tooth, but not to such an extent as to close up entirely and crush it. After the blades are sufficiently closed they are bodily raised and the tooth drawn out of the socket. It is therefore an instrument which might be really described as one for "pulling teeth," because it does actually pull the tooth out of its socket.

Mr. J. Henry Whatford, of Eastbourne, has sent an interesting model showing a large mass between the left upper central and the lateral. On first examination one is a little puzzled to know exactly what is being looked at, but I think we may decide that this is a gemminated mass between the normal left central incisor and the normal left lateral.

Mr. CHARLES A. CLARK presented a skiagraph taken of a second lower molar by means of the new x rays. It would be seen that the roots were shown, and that the pulp was fairly well indicated. It was taken by putting the sensitive plate in the mouth carefully covered with black paper to protect it from ordinary light, and wrapped in a sheet of rubber dam to protect it from moisture. The bulb was held close against the tooth, and the exposure was four minutes.

Mr. MARMADUKE SHEILD then read a paper on a case of

"Aneurism of the Hard Palate," which is published on page 537.

Mr. ALBERT said he had nothing to add to the paper except to mention a case that he saw, and to which, unfortunately, he was unable to give Mr. Sheild the reference. It was a case that occurred in the West London Hospital in which a distinctly pulsating swelling occurred on the alveolar portion of the upper jaw. It was removed, as far as he remembered, without extirpation of any part of the bone. He remembered a case at St. George's which might be of a similar nature to Mr. Sheild's. It was that of a young man who had what was subsequently found to be a sarcoma of the upper jaw. It originated as a slight bulging about the level of the cheek. At Mr. Albert's suggestion it was punctured with a trochar and canula, but nothing came out except a little blood. A few days after a similar swelling appeared on the opposite side. This was also punctured with a similar result. Then followed repeated attacks of hæmorrhage from the nose and mouth, and finally a fungating mass appeared about the site of each canula puncture. One night the patient developed a group of secondary deposits over the abdomen and chest. They varied in size from a filbert to a pea, the more superficial ones being obviously discoloured. Some in the course of a few days diminished in size, and one or two almost disappeared. The patient ultimately died from exhaustion, produced by recurrent hæmorrhages and pain.

Mr. W. B. PATERSON said he had treated one case of angioma by incision and cauterisation. The tumour was small, about the size of a split pea, and situated on the outer side of the alveolus above the incisor teeth. Its small size tempted him to break the rule of surgery, not to cut into a vascular tumour which, under pressure, could be made to disappear. He cut into it, expecting bleeding, and was prepared with an actual cautery. It bled furiously for such a small thing. He was able, however, with the actual cautery to completely check it. The angioma was cured, but there was necrosis of a portion of the outer plate of the alveolus, the periosteum of which had been destroyed by the process of cauterisation. He subsequently met with another case somewhat larger in size, and he intended to deal with it in a different way. His idea was to deal with that case by passing two curved needles, threaded with stout silk, well down to the bone under the growth in cross fashion, tying the silk tightly under and around them, in the way that Mr.

Sheild had described in Mr. Salter's case, and if necessary adopting further treatment by caustic or cautery as might be required. It was proposed that the patient should be taken into hospital, but the patient did not see fit to come. Hearing Mr. Sheild's case described it occurred to him whether if it had been a case simply of pulsating tumour, and Mr. Sheild could have felt perfectly certain in his mind that it was only a simple angioma, with no sarcomatous tendency about it, he could not have got at the posterior palatine artery at its exit from the posterior palatine foramen, and there, possibly by the aid of a little surgical "carpentry," cut off the blood supply of the tumour by driving up a wooden point or plug into the foramen and so compressing the vessels. Such a thing had been done before. He could not refer Mr. Sheild to cases, but no doubt he knew perfectly well all that had been done. This case might subsequently have been treated by extirpation of the tumour on the palate, and with the assistance of a dentist, risk of further hæmorrhage minimised by a plate applied to the surface of the palate and fastened to the teeth. Such a plate would have held the lint pads, &c., in place and kept up firm pressure for the control of bleeding generally. The plate could have been made before the operation at a guess of the normal position of parts, or from modelling composition at the time of operation as a temporary measure. Had the case been a simple one some such treatment might have been successful, but he quite saw the difficulty of Mr. Sheild's case. The tumour was certainly of a suspicious nature, and he, personally, thought, taking that view of the situation, that Mr. Sheild had done the correct thing in removing both it and the bone as well. The method he (Mr. Paterson) had referred to of treating a simple angioma, demonstrated that one must be prepared for necrosis of the bone after using the actual cautery. Mr. Sheild obviated necrosis in his case by cutting away the bone in the first instance, and possibly also any risk of further hæmorrhage on the separation of the sequestrum. Therefore, on the whole, Mr. Sheild did what was evidently the right thing to be done under the special circumstances of the case.

MR. MARMADUKE SHEILD said he had very little to say in reply except to thank the Society for the kind way in which they had received his paper. The criticism offered by Mr. Paterson was a perfectly just one. If he had been certain

that the case was one of aneurism by anastomosis, the bone being quite free, could anything else have been done besides removing a portion of the jaw? Of course the possibility of plugging the posterior dental foramen occurred to him at once. It was very easy to talk about, but very difficult to do. He had seen it attempted after severe hæmorrhage in operations for cleft palate by distinguished anatomists and surgeons on several occasions, and had always seen them fail to find it. However, it was recommended in the books and it ought to be possible to do it. The reason for its rejection on this occasion was, that he felt a large pulsating artery, probably a posterior palatine artery which appeared to be as large as a crow-quill. Pressure upon this did not in the least influence the pulsation in the growth. The tumour was evidently supplied by arteries from every direction, as is usually the case in aneurisms by anastomosis. He thought if he had seen the case before there had been much loss of blood, and whilst the patient was in a good condition, it would have been quite justifiable to have attempted to have cut away merely the growth and to apply some mechanical pressure such as Mr. Paterson suggested, but the difficulty to be encountered was the serious loss of blood the patient had already undergone. In his condition the result of such an operation might have cost him his life if it had failed, and severe recurrent hæmorrhage had again taken place.

Very often one could be wise after the event, and looking back upon cases might wish that some other treatment had been adopted, but with regard to this case if a similar one was presented to him again he should adopt the same course. He would only just add one word with regard to a point noticed in his paper, where he had spoken of slight recurring hæmorrhage which was checked by making the patient sit up, immersing the lower extremities in hot water, and injecting the buttocks with ergotine. There was no process so valuable as that for checking hæmorrhage in the mouth, and it was one of the most useful methods in dealing with those terribly troublesome cases which members of the Society must have met with, of recurrent hæmorrhage into the tooth socket, which he had seen on several occasions stopped by this means.

REPORT ON A CASE OF RE-UNITED FRACTURED HUMAN
TOOTH, WITH SOME REMARKS ON THE HEALING OF
WOUNDS OF THE DENTAL PULP.

By Mr. STORER BENNETT.

In December, 1888, Mr. W. E. Harding presented to this Society an upper incisor, which had been fractured across the crown, and which he had extracted from the mouth of a girl 17 years of age, only three or four days before he presented it. The history of the patient was that some ten months previously she had fallen down, striking the tooth and driving it high up into its socket. It became impacted, and remained fixed in its position, causing more and more irritation up to the time that Mr. Harding saw it. The pain gradually became so intense that there was nothing to do but to remove the tooth. He then discovered that it had been fractured across the crown, in a direction obliquely upwards and backwards. I was asked to make a microscopic examination of the specimen, and, therefore, removed a vertical section from front to back of the tooth, and the slide now exhibited shows the two outer halves remaining. It was seen that the broken portions of the specimen, though separated by a considerable interval, were firmly knit together by some calcified material which occupied the central portion of the gap. The margins of the space, however, being occupied by a substance of leathery consistence, were not calcified at all. Examined microscopically, the uniting substance was seen to consist of a calcified material of a spongy or cavernous character, with numerous spaces for blood vessels. The cavernous spaces had apparently been occupied by a substance somewhat resembling pulp, though I do not wish to affirm that it was pulp. In various positions slight absorption of the edges of the normal dentine has taken place, the spaces thus formed being filled up by cementum showing well-marked lacunæ and canaliculi. The amount of cementum, however, is not very great.

The next slide is a magnification showing the intermediate tissue. Spaces are seen which have been occupied by blood vessels, and from the black masses little tubes here and there may be seen passing, but there is no space where one can make out a distinct brush of tubes going off, as one would expect if a mass of dentine were present.

The next slide shows a smaller portion of the same thing more highly magnified, but I do not know that it adds any greater amount of clearness to the idea of the specimen. An examination of the specimen suggests to one's mind two different sources for the supply of this new material, either pulp or periosteum. The pulp was exposed, but only to a very slight extent, and, of course, it is possible to imagine that enlargement took place, that the overgrowth of the pulp filled up the space between the two fragments somewhat similarly to the way that chronic enlargement occurs in cases of polypus of the pulp, and that ultimately this calcified.

On the other hand we have evidence that there is cementum in the section, lacunæ and canaliculi being present in certain parts in rather large numbers, and we have *not* the evidence of any definite dentine structure asserting itself. We know that bone may be produced from many tissues other than those which naturally give rise to it. We have here, I think, a case in which hæmorrhage having taken place, a natural capping of the exposed pulp occurred, somewhat similarly to the way a wound heals under a scab. Blood was poured out between the fragments, organisation took place, numerous blood vessels were produced, and ultimately calcification occurred, and eventually if it had been left long enough I think the whole of the space would have been filled up with calcified material more or less resembling bone, or bone and cementum together. There are many specimens described where cementum has united a fractured tooth in the root, but I think we have here to do with a specimen unlike any other that has been figured or described, in so far as the cementum has been deposited between the fractured portions of the crown. I regret the report has been so long delayed. I ought to have presented it years ago, but perhaps there is one fortunate circumstance connected with it, and that is that Mr. Tomes has come across a fractured tooth which will compare with this, and no doubt we shall listen to some very interesting remarks from Mr. Tomes in the comparison of his own specimen with this one.

(To be concluded.)

Dental News.

NEW SERVICE TO SWITZERLAND.

Commencing June 1st, a new express service to Bâle from the Hook of Holland will afford greatly increased facilities to passengers journeying via the Rhine to Switzerland. Leaving London (Liverpool Street Station) at 8.30 p.m., and the chief Northern and Midland towns in the afternoon, passengers travelling via Cologne, Coblenz, Bingerbrück and Strasburg will reach Bâle at 8.20 the following evening.

In connection with the service the Great Eastern Railway Company announce that a through corridor-carriage with buffet will run between the Hook of Holland and Bale.

The Great Eastern Railway is becoming one of the best lines by its excellent improvements in the accommodation for travellers. Their Steamers are the best afloat for Continental traffic, and we can speak from experience of the great courtesy and kindness of their staff to travellers.

There is to be a conjoined meeting of the Holland Dental Societies at the end of this month, and we understand that a party of English Dentists on the East Coast and contiguous districts are making arrangements to participate, leaving Liverpool Street, on Saturday the 27th.

APPOINTMENT.

Mr. Adolphus B. Alexander, L.D.S., R.C.S.Eng., has been appointed Dental Surgeon to the Western Skin Hospital.

VACANCIES.

National Dental Hospital, Great Portland Street, W. The Posts of Assistant Dental Surgeon and House Surgeon are vacant. Application to be made to the Secretary by the 20th instant.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

DENTAL MALPRACTICES.

To the Editor of the "British Journal of Dental Science."

SIR,—Your correspondent G. W., rightly complains that the practice of dentistry is not carried on as it should be. He first refers to the action of the General Medical Council against "covering." This he seems not quite to understand. It is not the covering by a medical man who is giving an anæsthetic for an unregistered practitioner in dentistry that is intended to be prevented, but the leaving an unregistered man in a branch practice by a registered surgeon or dentist, who under the name of the registered man acts independently in the absence of the principal. It certainly is very discreditable of the medical man to give encouragement and countenance to an unregistered man who performs a surgical operation in his presence. It is to be hoped that he was not aware of it. In Plymouth, Nottingham, York, and lately in Cambridge, the Medical Societies have passed resolutions not to give anæsthetics for unregistered or advertising dentists. Your correspondent might call upon the medical man and explain to him what is being done to bring the dental profession into professional lines, and ask his co-operation in the future. It would be advisable to collect his facts, and send them to the Hon. Sec. of the British Dental Association, in so far as they bear upon a man unregistered practising dentistry—possibly some means of setting the law in motion might be discovered.

I am glad your correspondent recognises the insufficiency of the law to reach the unregistered man practising dentistry, or medicine, or surgery. The more this is recognised the more likely it will be that men will arouse themselves and get the Medical or Dental Act amended, so as to prevent this shameful state of things. The General Medical Council is perfectly ready to act upon cases presented to them in which it has power,—as your excellent report of Sir Dyce Duckworth's speech a few months ago showed—and it is to be very much regretted, that we have no really strong Society whose business it is to grapple with and use to the full the repressive measures we already possess. In South Wales the Dentists are combining, and taking action themselves to root out the pretenders,—they are unanimous and they are enthusiastic,—and I hope much good will result from their independent action. I think the time has now come when we ought to be thinking whether we cannot form a strong National Dental Defence Union, on the lines somewhat of the

Medical Defence Union, whose sole business it shall be to safeguard the interests of the registered dentist.

This Union need not in any way interfere with the British Dental Association, which would preserve its own particular line of educating the future dentist, and the public in professional methods. But we must acknowledge there are some minds who absolutely refuse to be led into any path of professional virtue, who in the most impudent manner set all rules and regulations at defiance, and disgrace us abominably—to our great detriment. These men must be met with the strong arm of the law, and where the law is not sufficiently strong it must be strengthened.

Briefly, the programme might be something of this sort:—

The Prosecution of unregistered dentists under Clause 3 of the Dentists' Act.

The Prosecution of registered dentists for covering, ditto for advertising.

The amendment of the Dentists' Act.

The defence of Dentists whose character may be unjustly attacked.

These might form the principal objects of the Union. It need not spend any money in keeping a Journal going, or in the organisation of large and influential meetings.

Now Sir, there are over four thousand registered dentists who do not belong to the British Dental Association for various reasons, but who have the good of their profession, and perhaps more the good of themselves at heart. In the large number of advertisements I have received from all parts of the country, there are only forty-four who are on the register. If a few only of these were struck off by the General Medical Council as they assuredly would be, the others would stop their unseemly practices directly.

I think, sir, for a small annual subscription, say of 10/6, when we had got over our first difficulties of formation, and secured a comfortable balance in hand, such a Society as I have sketched would be extremely useful. I shall be glad to hear what others have to say thereon.]

Apologizing for the length of this letter,

I am, Sir,

Your obedient servant,

HENRY BLANDY.

Preservation of Ointments, Fat, etc. To prevent fats of all description from becoming rancid, the *Dundschau* recommends the addition of a small amount of nitric ether, or a concentrated solution of sodium thio-sulphate.

National Druggist.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of April, 1896.

| | |
|---|------|
| Number of Patients attended | 793 |
| Number of Extractions | 463 |
| Number of Extractions under Anæsthetics | 140 |
| Gold Stoppings | 168 |
| Other Stoppings | 133 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 36 |
| Crowns | 11 |
| Irregularities | 31 |
| Inlays | |
| Total | 1748 |

H. A. COLEMAN, J. THEAKSTON, *House Dental Surgeons.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skiros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 683. LONDON, JULY 1, 1896. Vol. XXXIX.

A CASE OF CALCIFICATION OF A WIDELY EXPOSED PULP.*

By Mr. CHARLES S. TOMES.

The specimen to which I would call your attention is one so remarkable, and also so instructive in several points of view, that it will fully repay somewhat close examination.

The tooth is one which, having been broken right across its pulp cavity, has, nevertheless, succeeded in repairing the damage and sealing it up again—an event of such rarity that I only know of one other recorded case, namely, that to be found figured in my father's "Dental Surgery" (third edition, p. 341). Had my specimen been quite unique I should have hesitated to cut it up for microscopic examination, and then should have missed what, to my mind, are the points of greatest interest it has to show. The tooth is either a lower wisdom or a somewhat small second molar, the loss of the neighbouring teeth rendering its exact determination impossible.

The patient is a servant of a patient of mine, and was brought to me on account of very severe but intermittent pain of a neuralgic type, recurring most days, but not every day. I found a tiny opening in the gum, which was otherwise of healthy appearance. A probe introduced disclosed the presence of what felt like a complete but rather rough

* Communicated to the Odontological Society of Great Britain.

surfaced tooth. The history was that some three years previously an attempt had been made to extract a tooth in this situation, but that it had been broken off. It was exquisitely tender, and occasionally very painful for a long time afterwards, but it gradually got better and healed over, but it never remained absolutely comfortable for long together, although the severe paroxysmal pain which brought her to me was only of a few weeks' standing. With the aid of cocaine I reflected the gum from over it, and subsequently had no difficulty in removing it with an elevator. I then found that it had been transversely fractured a little way above its neck, and that what should have been an open pulp cavity was occupied by a cauliflower-shaped mass of shining polished ivory projecting above the original surface of fracture and overflowing on to it. By cutting it carefully with a hair saw I was able to get four good longitudinal sections, and found that the pulp was not wholly calcified, but that a residue of the pulp chamber was still occupied by living pulp. On examining it with a low power the large mass of secondary dentine was found not only to project a good way above the general level of the fractured surface, but also to have, so to speak, overflowed it all round the orifice of the pulp cavity, and to be everywhere closely adherent to—indeed, continuous with—the old dentine. Roughly speaking, its structure may be thus described; its free or upper surface presented distinct lamination parallel with the surface; next came irregular lacunal spaces; then sparse dentinal tubes; and finally, in its deepest portion—which was inside the original pulp cavity—abundant dentinal tubes, which were in places continuous, though oftentimes joining by an abrupt bend, with the dentinal tubes of the original dentine. The overflow on to the fractured upper surface of the original tooth in places was slight, in other places it extended in a gradually thinning layer out to the very edge of the tooth;

but what was especially noteworthy was that there were included in the new calcified growth quite a number of entirely detached and displaced splinters of the old dentine.

To proceed to a somewhat more detailed description of the new tissue.

The Laminated Outer Layer.—This consists of laminæ parallel with the surface, and varies in thickness, reaching in places $\frac{1}{20}$ inch, and containing about ten well-marked layers. Here and there it constitutes the whole of the overflow, and it contains some canaliculi, taking a direction perpendicular to the surface, and a few well formed lacunæ with their canaliculi. It is present everywhere, though its amount, and the distinctness of the lamination are variable.

The Lacunal and inter-Globular Spaces.—The tissue immediately below the laminated layer is characterised by an immense number of lacunæ and inter-globular spaces, which are in parts well formed and in other parts very coarse and irregular.

The fine boundary of this region of lacunal spaces is in places well defined, and terminates with bodies of the encapsuled lacuna type; elsewhere it passes insensibly into the region occupied by tubes, in the outer part of which latter region interglobular spaces are abundant, and are somewhat irregularly disposed.

The Tube System.—In the centre of the tooth the tubes, like those of normal dentine, run vertically upwards towards the surface, while towards the sides of the new mass they radiate outwards, passing thus beyond the limits of the fractured old dentine, and spreading themselves fan-like over the edges of the original tooth to a certain extent.

In that portion of the secondary dentine which lies within the old dentine (which latter so constituted originally the lateral walls of the pulp cavity), the tubes run more or less outwards, and are joined up into continuity with the old

dentinal tubes, there being generally an abrupt bend and some dilatation at the junction.

It will thus be seen that the whole boundary of the resultant pulp cavity, formed at its side and below by the original dentine and above by the new secondary dentine, is formed of dentinal tubes of normal appearance, and that the pulp, though diminished in bulk, has almost perfectly normal surroundings over nearly its whole area.

As the tubes run outwards they become more widely separated, owing to their fan-like spreading; it is noteworthy that there are not a greater number of tubes in the expanded portion, but that the interstices between them become larger. A good many short lateral branches are given off, such as those which occur abundantly in the dentine of the roots of normal teeth.

Towards their outer extremities many of the tubes show longitudinal dilatations, and are joined up to the canaliculi of lacunal spaces; some end in brush-like expansions, while others terminate in loops, the loops being common to two or more tubes; others are sharply bent back on themselves. At and above the ends of the tubes fine globular formations may here and there be distinctly seen.

The included Splinters of Dentine.—As has already been mentioned, this specimen is probably unique, in that the secondary dentine mass contains quite a number of little detached pieces of the original dentine of the tooth which were splintered off in the original attempt at extraction, and which have become solidly enclosed in the new formation.

They have been displaced in various ways so that their tube systems run in all sorts of directions, and are in no way conformable with the tubes of the new growth. But they have, in their irregularity of position, this much in common, that the tubes of the new growth, when they are of any size, do not pass beyond them, but terminate beneath them. To

this, however, there are some exceptions, where quite small chips appear to have been driven more deeply into the pulp.

Upon the whole, then, it may be said that the broken fragments of old dentine either lie embedded in the region of lacunal spaces, or between this and the commencement of the tube system. It is not a little remarkable that none of the fragments show the least sign of absorption, but that their edges are left quite angular, just as they were broken off. Where the tubes commence close against the fragments they are bent about, obviously with relation to the included pieces.

Marks of Absorption.—It is notable that notwithstanding the violent irritation to which the pulp was subject, in very few places can any mark of absorption be found,

The occurrence of “encapsuled lacuna”-like forms has already been mentioned where the lacunal region merges into that of well-formed tubes, but a few marks of absorption and subsequent calcification are to be found elsewhere, and in unlikely places. Thus under the calcified overflow are some pits occupied by Howship’s lacunæ.

Everyone must, I think, agree with me in astonishment at the extraordinary vitality of this pulp and its amazing success in repairing damages, and it is worth while to examine, or at least to speculate, upon the conditions under which this took place. The whole roof and a little of the sides of the pulp cavity had been torn off, and the pulp thus widely exposed, apparently a little below the edge of the gum. This must have been temporarily protected by the formation of a coagulum, and ultimately by the contraction of the edges of the gum and its almost complete healing over it, and under these conditions its extraordinarily successful calcification went on.

Is there not a practical hint to be derived from this? Here was a lacerated pulp with loose fragments of sharp

splintered dentine jammed into it, coated over only with coagulum, and it did not die nor inflame, but calcified. I think that in capping a pulp, and especially a traumatic exposure, we should probably do better to avoid wiping away any blood or exudation, but leave the effused blood to coagulate; we can put nothing better upon the pulp surface. And probably, when we do commence to cover it, we should do best to put something organic—sterilised fibrin or gelatine, for instance—and I shall certainly try such a course of procedure when the opportunity offers, and refrain from placing in contact with the pulp either inorganic materials as a vehicle for medication, or any strong medicaments.

But there is another and less hopeful side to the suggestions presented by this case; there was almost complete success in the formation of secondary dentine, with absolutely no loose nodules or irregular encroachment on the pulp—in fact, precisely the condition which we hope to obtain when a pulp is capped; and yet it was not comfortable, and notwithstanding its full protection under the gum it became the site of very characteristic pulp irritation, and consequent neuralgic pain.

Was this an accident? or is the capping of pulps to end in this way usually? Clearly we can hope for no better results in the way of repair; yet why did it become so painful? For all that we can see *post-mortem*, the immediate surroundings of this pulp had become almost exactly those of a healthy pulp, with its dentinal tubes radiating from it.

Another set of speculations of a more theoretical kind arises, how was the calcification done? Ordinarily the odontoblasts would be torn off and remain adherent to the portion of the tooth which was broken away in the attempted extraction. Were they not torn off, or were they reformed, or was it all done without odontoblasts? If so, then dentinal

tubes can be manufactured without odontoblasts, which, from what we know of the process, does not seem likely. But in any case, the first formed or outer layers are laminated, unlike anything which happens in normal tooth formation. Were these laminated layers a plastic exudation shed out from the wounded pulp, subsequently organised and finally calcified? I confess that this idea rather commends itself to me as it would give an easy explanation of the way in which the new tissue flows over the fractured surfaces exactly as if it had got there in a fluid form.

One section seems to afford clinical proof that the material which subsequently calcified was originally fluid. A piece of old dentine has been raised at one end, but left attached at the other, just as happens if a chisel is driven into wood nearly parallel with its surface, but the chip not detached. This has been glued on by something which ran in right under the raised portion with a degree of completeness which strongly suggests its original fluidity.

The same idea is equally strongly suggested by the manner in which the overflow, subsequently calcified, ran out in places over the whole fractured top of the tooth, reaching even to its very outside in a gradually thinning-out layer.

So far as it is possible to read the history of events this appears to have happened. The roof and parts of the sides of the pulp chamber were torn off, and the exposed part, probably retaining its odontoblast layer, swelled out somewhat from the orifice (as indicated by the fan-like expansion of the tubes), and shed out, as it certainly would, plastic exudation over its whole surface, which flowed out over the top of the tooth left. This plastic exudation became permeated by migrating leucocytes, and in and under it the fragments of dentine were enclosed. This was protected by blood-clot, and ultimately by the healing over of the gum, &c. This organised exudation afforded the means for the calcification

of the laminated and also of the lacunal tissue, and also for the absorption, and ultimately formation of lacunæ of Howship where this had happened. After the fibrillation and organisation of the effused plastic exudation, the pulp itself commenced to calcify in the ordinary way, its odontoblast layer determining the number and form of its tube systems. That this was the case is indicated by the fact that, though the area is larger, there are not more tubes, but only larger interspaces between the tubes, on its expanded portion, and so far as it goes points to their being neither a fresh formation nor multiplication of the odontoblasts. They were stretched apart, and so in the stretched portion the tubes are far apart, becoming dense in the more expanded portion. Thus, so far as it goes, it is a strong confirmation of the view that a dentine tube is a consequence of the presence of an odontoblast. The fragments of dentine, with the exception of a few small pieces which were driven in more deeply, lay on the surface of the pulp, and were stuck to it by the plastic exudation. Hence the dentinal tubes commence under them (with trivial exception), and mark the limits of pulp tissue and of exudation tissue.

For the very beautiful photographs which illustrate this paper I am indebted to Mr. Mummery, to whom I am also indebted for looking through the proofs of this paper with a view to seeing if anything of moment which had struck him in looking through the specimens had been omitted.

PROPOSED AMENDMENT OF THE MEDICAL ACT.—Mr. Muir Mackenzie says that any such proposed legislation would be involved in considerable difficulty. He has tried to draw more than one clause for the Amendment of Section 40 of the Act of 1858, but has found it a very difficult task. He is the legal adviser of the General Medical Council.

THE EARLY TREATMENT OF CROWDED MOUTHS.*

By Mr. J. F. COLYER.

Mr. President and Gentlemen,—In bringing the subject of “The Treatment of Crowded Mouths at an Early Age” under your notice to-night, I do so principally with the object of drawing you attention to a form of treatment, which is, I think, but little practised, but which is, nevertheless, in my humble opinion, an extremely successful method to adopt in many cases. In referring to this subject, I do not propose to enter into the etiology of crowded mouths, which of itself is sufficient to form the theme of an interesting discussion. The first question I wish to lay before you to-night is this—Is it advisable to treat a crowded mouth directly such a condition in the future seems inevitable? Personally I think the earlier the treatment of a crowded mouth is commenced the better; for as time progresses the irregular position of the teeth becomes more fixed and more aggravated, and hence the case is more difficult to treat. But there is, I think, a stronger argument than this, namely, that if room is made for each tooth as it erupts, the case by the time the succession of teeth is complete, simply resolves itself into the treatment of either a crowded-canine or second bicuspid whichever tooth happens to erupt last; while, if on the other hand, we leave the treatment of the crowding until the succession of teeth is complete, we shall have to deal with a condition in which probably the whole of the six front teeth are involved, and the correction of which would be long and tedious. Personally I see no argument whatever against treating a crowded mouth directly such a condition is recognised.

* Read before the Odontological Society of Great Britain.

The next point worthy of discussion is—What are the relative advantages of treatment by *expansion and extraction*? I considering this question there are three points which should be clearly kept in mind :—(1) The great prevalence of dental caries ; (2) The increasing tendency for the teeth to be lost at an early age through chronic periodontal mischief ; (3) The fact that in the condition we are called upon to treat, nature is endeavouring to get sixteen teeth in the place where only fourteen, and in some cases twelve can be accommodated.

Now these points have the following bearings upon our treatment. They indicate—(1) That the method we adopt should tend, if possible, to reduce the tendency to dental caries ; (2) That the movement of the teeth by mechanical methods should be avoided from these points of view—(i.) In teeth moved by mechanical means there seems to be a predisposition to chronic periodontal trouble ; (ii.) All mechanical contrivances are liable to directly or indirectly cause caries of the teeth.

Let us now turn and see how expansion or extraction fulfil these objects. Taking expansion first we find that it does not tend to reduce the liability to caries, for by this method the pressure of the adjacent teeth on one another is if anything increased, and, secondly, expansion is a mechanical method, and the time during which plates have to be worn is somewhat considerable. There is also another point which is too frequently overlooked with expansion, namely, that the room gained is apparent and not real. A tooth when moved by mechanical means moves on its apex in a manner similar to the swing of a pendulum ; in expansion we move a large number of teeth at once, forcing them in an outward direction. By this means the upper portion of the teeth, namely, the crowns, are made to occupy a greater arch, but the lower portion remain in practically the same crowded condition,

hence the tendency for cases treated by expansion to relapse.

Another great disadvantage of expansion is to be found in the disarrangement of the bite which so frequently results, while in addition the very sloping direction into which the front teeth are often forced is decidedly unsightly.

Turning to extraction we find that (1) room is gained not only for the crowns, but also for the roots of the teeth. (2) The amount of mechanical treatment is lessened, and in many cases abolished. (3) The pressure on the teeth is relieved, and a certain amount of isolation obtained—a condition conducive to the prevention of caries. (4) The bite is less disarranged than with expansion. (5) The teeth invariably assume a better direction. To sum up, it seems that crowded teeth should be treated as far as possible by extraction.

Taking for granted that early interference is called for in the treatment of crowded mouths, the next point I should like to suggest for discussion is this: On what lines should we proceed with cases that come under notice? For simplicity of description I propose to divide this question under two headings. (1) Those cases where the first permanent molars are unsaveable. (2) Those cases where the first permanent molars are capable of being saved.

(1) *Cases where the first permanent molars are unsaveable.*—In these cases I have found good results to follow from a line of treatment somewhat similar to the following: The first permanent molars are filled or treated in the best manner possible, so as to retain them until the second permanent molars have erupted. The crowding of the upper and lower incisors is then relieved by the removal of the four temporary canines. If the teeth erupt the normal way, the first and second bicuspid will come into a good position and we shall then have the following condition: the four incisors and the four bicuspid in a regular arch, with a greater or less space

existing between the lateral incisor and the first bicuspid, so that the canine erupts just external to the arch; in other words, we shall have to deal with a fairly simple irregularity, namely, a canine high in the arch. To make room for the canines the first permanent molars should be removed directly the second permanent molars are fairly through the gum. A plate to hold back the second molars should then be inserted, this plate is made to cover the palate in such a way that it comes in contact with the palatal surfaces of the incisor teeth, while to the back of it are fixed half round gold wires which pass along the anterior surface of the second molars the plate being quite free of the bicuspid. This form of plate is generally known as the Woodhouse plate and possesses this advantage: it retains the second molars in position, preventing them moving forward, while at the same time it allows the bicuspid to fall back, partly by the action of the bite and partly by the pressure of the canine tooth, so that many cases get quite well without any further mechanical treatment, a point of no small importance.

A line of treatment similar to that I have just indicated will naturally not be applicable to all cases, but it serves, I think, to illustrate the principle which we should adopt.

(2) *Cases where the first permanent molars are capable of being saved.*—This type of case is decidedly more satisfactory to deal with than the preceding. Our treatment should in the first instance be directed to the first permanent molars, these teeth if necessary, being filled with fillings as permanent as possible. This accomplished space should be obtained by the removal of the unerupted first bicuspid. The operation consists in removing the deciduous first molar and then the bicuspid, and was first suggested by Mr. Tomes for the treatment of that irregularity of the lateral incisor where the mesial angle is tilted forward and directed towards the median line, and is, as you are aware, extremely diffi-

cult to correct if left until the permanent canine has erupted.

If a skull exhibiting this condition be examined, it will be noticed that the irregularity of the lateral is produced by the permanent canine pressing on the end of the root of the lateral. To relieve this pressure there is but one method available, namely, to remove the bicuspid and so allow the canine to fall back. It may be argued by some that extraction of the temporary canine would be sufficient to remedy the condition of the lateral, but if a dried specimen be carefully studied it will be noticed that the removal of the temporary canine will not have the desired effect of giving room for the permanent canine.

In the cases, the photographs of which I propose to throw upon the screen, the operation has been performed for the treatment of various types of crowded mouths, and in one instance for the relief of what I considered to be a case of early superior protrusion. Of my nineteen cases I am able to show you twelve to-night, in the other seven I have been unable to retain trace of my patient.

In some of the cases the second bicuspid have not yet erupted, and such cases can hardly be said to be complete, but they are, I think, sufficiently advanced to show the effect of treatment. Before, however, placing these cases on the screen, it may be well to refer to the actual operation. First an anæsthetic should always be given, as the removal of the bicuspid is naturally attended by a good deal of pain, a point of great importance with children.

If we confine our attention to one side of the mouth at a time, nitrous oxide is quite sufficient, but if it is desirable to move both bicuspids at one sitting, then ether must be administered. The instrument I generally use for the removal of the teeth is a pair of Read's upper stump forceps with rather long blades. The temporary molar is first removed, and in

attempting the extraction of the bicuspid the blades should be opened fairly wide ; this is worthy of remembrance, for in my first cases I found a decided tendency not to keep them open sufficiently. The external blade, too, should be kept well outwards. It is well to advise the use of an antiseptic mouth-wash after removal, and if the extraction has been difficult, the wound should be syringed out several times a day.

(Mr. Colyer then showed, by means of lantern slides, twelve cases in which the treatment by removal of the unerupted bicuspid had been carried out). In concluding his remarks he said :—

An analysis of these cases will show that whenever the operation has been performed for simple crowding, the result obtained has been good. In one case, although the irregularity of the lateral has been remedied, there seems to be too much room, and it is questionable if the bicuspid should have been removed. In another case the crowding would, I think, have been better treated by the removal of the laterals. In the case showing early signs of superior protrusion, the result is on the whole good, and I think that in this class of irregularity the removal of the bicuspid at an early age is likely to be beneficial. Generally speaking, the form of treatment is a valuable one, and as time gives us experience we shall be able to better choose in what cases it can be best adopted.

In conclusion, I feel that I have done but scant justice to so important a subject as the treatment of crowded mouths ; but to deal with it at all adequately would require much more time than we have at our disposal to-night. The principle points I should like to suggest for discussion are : (1) Is it advisable to treat a crowded mouth directly such a condition in the future becomes inevitable ? (2) Which is the better form of treatment in the majority of cases, extraction or expansion ? (3) In cases where the first permanent

molars are savable, is early removal of the first bicuspid a good method of treatment with the exception of those cases calling for extraction of the laterals? (4) In cases where the first permanent molars are unsavable, what is the best plan of treatment? (5) In such cases, at what age should the first permanent molars be removed?

A DENTIST AMONG THE SMALL-POX.

By CHARLES FOX, L.D.S.

As the merry month of May began I grew weary of waiting for the patients that shun our plague-stricken city, or the neighbours who are obliged to tighten their purse strings and put off dentistry for better times. So donning my most ancient garments, and laying aside forceps and excavators for a while, I plunged into the thick of the conflict with small-pox, and had four weeks' hand to hand struggle in the houses of the poor with this terrible and loathsome disease.

Now it is an open secret that our City Fathers have not proved Solomons, and that our provincial medicals were floundering along in a hopelessly incompetent fashion. How deficient had been their grip of affairs, I never dreamed of, until actual contact with the cases forced the facts upon my notice. When the epidemic seemed to be gaining ground rather than retreating, and ghastly tales of patients unwashed and inefficiently attended for seven weeks at a stretch in the hospitals, the dormant spirit of the authorities was roused. When the death rate inside this group of sheds that lies close to our most populous quarters, reached over 30 per cent., and the effluvia from the huge centre of infection penetrated every other home almost that lay hard by, at the eleventh hour,

Dr. Brooke of the Metropolitan Asylums Board was handed the reins ; and a reformation almost magic in its effects has taken place. The same lax management of matters was going on outside. Nature, said the doctors, must be allowed to take her course. We can do nothing to combat the fever. We can only wait until the eruption appears, notify the case, and quarantine the household in the narrow limits of their slum dwelling to live or die in the depressing atmosphere. Mr. Pickering, the superintendent of the new Leicester Hydropathic Sanatorium arrived on the scene about the same time as Dr. Brooke, and while the latter was ordering in baths and erecting laundries at the hospital, Mr. Pickering and a voluntary committee of leading citizens bathed and washed and packed and Turkish bathed the outside sufferers in thorough hydropathic fashion.

I need offer no apology then when I say that after appealing in vain to the doctors to come and help in a work and treatment that was actually assisting Nature in the struggle with fever, I joined the guerilla troops and have gone in hot and strong for the hydropathic methods. Emulation and a sense of shame has brought the delinquents to their senses, and baths and cleanliness are the rule even among the orthodox ranks to-day. I will give a glimpse of my notes that in some 150 cases I have very carefully made from day to day, and your readers can judge whether a dentist trained to consider absolute cleanliness of tooth and mouth essential to success, was not justified in feeling indignant.

Called at —, found boy aged 5 years, room door and window closed, temperature of room 72, of patient 104, pulse 130, bedclothes very heavy, child tossing about and moaning, eyes glued together with exuding mucus, mouth, lips and tongue extremely foul. Questioned relatives and found no direction whatever had been given as to personal care of patient, diet or ventilation. Doctor had called twice before

deciding small-pox was the correct diagnosis, then notified the case. Positively the only representative of the majesty of the medical profession in that neglected room was a bottle of medicine. Nature, deprived of all her fairer attributes, cleanliness, fresh air, and suitable food, was allowed to drift on her course.

Again the same day I find this entry :—Saw — at — girl aged $5\frac{1}{2}$ years. Dr. X saw her Friday, and thought the feverishness might be due to small-pox, sent in bottle of medicine and would call again. Child so much worse Saturday that Dr. Y was sent for. He said it was too late to save the child, as it was sinking ; sent a bottle of medicine. Same evening, as girl was choking with viscid saliva, sent round to nearest surgery, and Dr. Z came and ordered the child to be bathed, but gave no explicit directions as to temperature of water, etc. He also sent in medicine, and to-day, after three weeks of successful hydropathic treatment, while the child is running happily about the house, those three monuments of medical capacity, white, pink, and yellow, rest unfinished on the shelf. I followed this case through closely, and while the little sufferer was being bathed, removed the accumulation of sordes and filth from lips and mouth, and cleaned eyes and ears as carefully as preparing a central for a gold filling. Condyl's fluid both in the baths and as a mouth wash and gargle, has proved an easy first among the antiseptics for this special complaint.

There have been many instances where dental training has proved of use in treating the details of sanitation, and it is in the minutiae of cleanliness that the scale often turns in critical cases. One cannot afford to neglect anything in a thorough death grip with the disease, and I have seen some very near things during this month, where the slightest neglect would have lost the case.

We are fortunately seeing a steady decrease in the number

and severity of the attacks. It has been a sad time for my native city, but we shall pull ourselves together in a very short time now that a spirit of reform seems to have permeated all ranks. There are rows of insanitary houses to demolish, the infectious diseases hospital to remove a mile outside the gates, a better system in quarantining and in treating cases to be established ; and Gloucester will once again, as it has done for many years past, rank among the places with the lowest death rate in the country.

CAPPING PULPS.

By Dr. GORDON WHITE, Nashville, Tenn.

I believe that, in the field of dental operations, the capping of the dental pulp is as successful, properly performed, as the average dental operation. Capped pulps do live. My method of capping is as follows : The patient rinses the mouth with as warm water as can be used comfortably, to which is added a little alcohol or a few drops of an antiseptic. The cavity is then washed with warm water from the syringe and is excavated as usual, and occasionally wiped out with a small pledget of cotton saturated with chloroform. Using sterilized scissors and foil pliers, a made cap is cut "from a subscription blank" and dipped in chloroform, which quickly evaporates, leaving the paper of its original stiffness, and sufficiently sterilized. On this cap with a small pointed sterilized instrument is placed the smallest particle of a chloro-percha solution to the chloroform, and in making the solution, fifty grains of aristol to the ounce of chloroform should be added. This little plaster is turned over on the point of pulp exposure and gently pressed to position with the smallest piece of spunk, and a few drafts of hot air thrown on the cap, which evaporates the chloroform from the solution, leaving the cap sticking to its position, when thin cement is flowed over it and the filling inserted as desired.

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DENTISTS AND BOARD OF GUARDIANS.

We are glad to see that slowly but surely the importance of appointing dentists to Public Institutions, having especially the care of children, is becoming recognised. Of course we have ignorance, prejudice, and stupidity to fight against, and very uphill work it is, but the advantage of each point gained cannot be over-estimated. Several Boards of Guardians have appointed salaried dentists to watch over and preserve the teeth of the children committed to their care, and we believe that in all instances where such a Board has applied to the Local Government Board to confirm the appointment of a dentist, this permission has been freely given. The Inspectors of the Local Government Board, besides examining into the general health and hygienic arrangements of the Schools, make special enquiries (*inter alia*) into the condition of the children's teeth. All this is very right and proper, but we cannot remain satisfied until all these Schools have their salaried dentist attached, and the teeth of the children undergo periodical and systematic treatment.

We say salaried dentist advisedly. In many cases the dentist attached, is an honorary official. Such unpaid duties must be, and naturally are, perfunctory. They are gone through with the greatest amount of dispatch, and—on the principle of never looking a gift horse in the mouth—are never looked into by the Board. Now what is wanted is not wholesale extraction, but systematic conservative treatment, with a register of each case, and statistics for reference. This can never be hoped for under the honorary system. The dentist ought to receive honest pay for honest work, and

ought to be liable to rebuke and dismissal for neglected or improper work. Again under the system we advocate, the best man would be more likely to compete for the post, and the opportunities for rushing an incompetent or unprofessional man through an election would be minimised. In a case which has come under our notice, a dentist who carries on his practice in an unprofessional way, was elected by a Board of Guardians in a hole-and-corner manner. We cannot expect to raise the general tone of the profession, or to make ourselves respected in the eyes of the public, if "irregular brethren" are permitted to hold honourable positions. The only real safeguard is to have a salaried official, who enters into a contract with the Board to attend regularly, to provide a monthly statement of his work accomplished, and to draw up an annual report. It comes as a surprise to some of our worthy Guardians to learn that the children's teeth should want any attention at all. We read of them wanting to know if there is anything special about the cases, that the doctor cannot attend to them. With many of them the only known panacea is extraction. Some of them proudly boast that they have never used a tooth-brush, and why should the children be provided with such needless luxuries? Then the Guardian whose only dental experiences have been in connection with the local blacksmith, relates his story and the laugh goes round. Then another member of the Board remembers that they pay a few pounds to the local Infirmary, and suggests that the worst cases should be sent there to be seen to. By whom? Then after all this, the name of some dentist is mentioned, and he is asked to see the cases gratuitously, or, as is most frequently the case, he offers his services, which are accepted with thanks, and the matter ends. The only way by which we can put a stop to this sort of thing is by educating the public, particularly the rising generation. We can also do a great deal by bringing the state of things to the notice of our Medical friends, who are generally most willing to assist us in our efforts, and often have a much more extended field of influence than that possessed by

ourselves. It is only by individual effort that we can hope to erect the Citadel of Hygiene and Education on the ruins of Disease and Ignorance.

THE DENTIST'S BUTLER.—According to a Paris paper there is a famous Parisian dentist renowned for his *brusquerie*. His short-comings in this respect, however, are almost redeemed by the exquisite manners of his butler, who, on showing a patient into the waiting-room, is in the habit of asking in the most tender accents, "Whom have I the pain of announcing?"

ADVICE ABOUT THE TEETH.—The care of the teeth is a subject which seems of perennial interest to readers of many of our lay contemporaries, especially those journals which appeal to the fair sex. To do them justice the advice given is usually sensible, though occasionally mistakes are made. We congratulate *Madame* in particular, upon the excellent advice given to mothers concerning their children's teeth, and the early use of the tooth-brush. Her recipe for a tooth powder however, seems to us to be a most nauseous compound, its efficacy not being commensurate with its dirtiness. Here it is. Areca nut charcoal $\frac{1}{2}$ oz., Bol d'armenie $\frac{1}{2}$ oz., myrrh $\frac{1}{4}$ oz., and two drops of oil of cassia. Evidently feeling afraid that this recipe will be too much for many of her readers, *Madame* also supplies an alternative prescription which is composed of one ounce of "dry chalk," (what is "dry chalk"?) iris powder half an ounce, powdered myrrh four grains, and one drop of solution of cocaine. "Solution of cocaine" is delightfully vague, while the admixture of that and the myrrh is so small that if they were omitted "they never would be missed." *Madame* also strongly advises rubbing fresh strawberries on the teeth, while lemon juice in her opinion has a very good effect on tender gums. She luckily warns her readers against allow-

ing the lemon juice to touch the teeth. It is a pity she does not include the strawberries, but luckily these can only be obtained for a limited period. *Madame* directs her readers "to follow the example of all highly civilized people, and breathe through the nose." Unfortunately it is the highly civilized people who do *not* breathe through the nose. But the advice is good, if possible.

CHEERFUL SURROUNDINGS.—*Items of Interest* pithily remarks :—"If we have confidence that we are a good dentist, we should surround ourselves with the evidence of our ability. A poverty-looking office is generally taken as the evidence of a poor dentist ; untidiness as a slipshod dentist ; a dearth of literature as ignorance. We do not expect to find a clean dentist in an unclean office, an esthetic, approachable, genial fellow, in a dingy, musty, repulsive atmosphere ; a pure, sympathetic, warm-hearted gentleman with a breath of tobacco smoke and stale beer. What we are is generally stamped on what we appear ; in fact, what we appear to be, is usually better than what we are, so that we have no excuse for a neglect that hides any good qualities we may possess."

We trust that the gloomy, funereal, waiting and consulting room are rapidly becoming things of the past. As there are so many unpleasant associations connected with our specialty, it is our duty—as it ought to be our pleasure—to make ourselves and our surroundings as pleasant as we can. A lavish profusion and gorgeous surroundings are evidence neither of taste or ability, and can be used as a cloak to hide their absence. Our habits as well as our habitations should be free of offence to the most fastidious.

AN OBTUNDANT.—Dr. F. F. Van Woert, of Brooklyn, uses a 50 per cent. solution of sulphuric acid as an obtundent for sensitive dentine. He discovered it by accident, while endeavouring to open the pulp canals of a devitalized

tooth with the acid solution. The rubber dam was over the dead tooth, and also over a carious bicuspid which stood next it. In some way the solution got into the cavity of the living tooth, which he had in vain been striving to excavate. To his surprise he found that the tooth which had been agonizingly sensitive, was now completely obtunded. Since that time he has been using it with very gratifying results, although not in every case with complete success. Usually, however, it enables him to excavate painlessly. He uses but little at a time, and as the affinity is soon satisfied it becomes self limiting and will do no harm. If too much is used, it can be readily neutralized with a solution of soda bicarbonate. Dr. Abbott instead of acid states that he has obtained very good results with an alkali, namely, carbonate of soda. His treatment, however, takes four days' pretty constant application, before the dentine is sufficiently obtunded. His theory is that normal dentine is alkaline and insensitive, but that dentine which is attacked by caries is acid. The soda treatment is therefore used to restore alkalinity and consequently insensitiveness. We cannot agree with Dr. Abbott however, in looking upon normal dentine as being insensitive.

A MARRED CAREER.—Mr. Thomas Twist who was described on the Charge Sheet at Wolverhampton as a dentist, seems to have either a convincing style, or a persuasive eloquence, which would have brought him fame and wealth if he had chosen to adhere to his profession. Unfortunately he persuaded Mr. Povey of Chapel Ash, to accept a cheque in exchange for a pork pie, and the balance in hard cash. When Mr. Povey presented the cheque at the Bank, his confidence in human nature in general, and Mr. Twist in particular, received a rude shock, as the draft was dishonoured. The machinery of the law was set in motion, and the ingenious Mr. Twist, in spite of his having shaved off his moustache, was brought to justice. As it was not his first offence, he will rest in seclusion for three months, let us hope with beneficial results. His name by the way, does not appear on the Register.

ADMINISTERING DRUGS TO PATIENTS.—Dr. Russell Cool in an American contemporary advocates the use of drugs in a very general manner. He advocates the employment of aromatic spirits of ammonia, antikamnia, or a combination of antikamnia and codein, phenacetin, or phenacetin and caffeine, acetanilide, and antipyrin, or, in some cases, morphine sulphate, or, in conjunction with the sulphate, atropine. He is in the habit of administering $\frac{1}{4}$ grain of morphine by the mouth one hour before an operation. Chloral, 5 grains, morphine $\frac{1}{4}$ grain, brandy 1 ounce, have with him destroyed, in the majority of cases, the usual nervous symptoms that are unpleasant to him as a precedent to any operation. These same agents he administers with benefit to his patients when operations are performed without anæsthesia. He also mentions digitaline, ergotine, cocaine, atropia, strychnine and various other important agents, as being useful in conjunction with these extreme cases. We consider that the drugging of patients either with sedatives or stimulants, a most dangerous practice, and one that should only be resorted to under most exceptional circumstances. Aromatic spirits of ammonia is a most useful diffusible stimulant in cases of faintness, &c., and for any acute pain such as extracting a tooth or pulp, or exposing a pulp, or even for drilling very sensitive dentine, we have a safe anæsthetic in nitrous oxide gas. We feel sure that the above formidable list of dangerous drugs are not required, and will not come into general use by dentists.

THE USE OF RÖNTGEN RAYS.—The man Montague who swallowed his denture while in prison at Dundee, has at last got rid of his unwelcome intruder. His stomach was photographed by Röntgen light on an 18 by 14 inch plate, with an exposure of one and a half hours. A faint negative was the result showing something like a set of teeth above the stomach. It was blurred and in duplicate, but this was supposed to be due to the man's motion in breathing, and also to the plate having shifted its position. A careful ex-

amination of the stomach was performed with no result, but the plate was afterwards found in the intestine and released. We wonder if the faint image on the negative was that of the teeth; or whether the dentine had again changed its position, as the operation was performed 24 hours after the photograph was taken. In the case of a vulcanite denture only the teeth and clasps would cast a shadow, the plate being transparent to the rays.

ARTIFICIAL BLOODLESSNESS.—*The Medical Press* reports an address by Von Esmarch. It was through accident that in 1873 he came upon his method of artificial bloodlessness. A Danish lady had an inflamed finger and wished to have a mourning ring removed. To effect this, he wrapped a thread closely round the finger from the tip up to the ring. He then passed it under the ring and unwound the thread in the reverse direction. The ring was then easily removed on account of the artificial bloodlessness thus produced. This was the principle of producing artificial bloodlessness in a limb. By encircling the limb in an elastic tube the vessels were kept empty as long as necessary. It was objected to this method, however, that the procedure caused paralysis, that the edges of the wound died, and that after removing the tube the bleeding was more profuse than before. He does not use the tube any longer but an elastic band, but in operation on the shoulder and hip-joint the elastic tube was still indispensable. The following is the procedure in the Kiel Klinik:—The limb is first of all held perpendicular if possible, and enveloped in an elastic bandage. The elastic girdle is then applied at the desired level, but care must be taken not to cause paralysis. On the other hand it should not be applied too loosely, so that some expertness is required. After the operation the vessels are ligatured, the wound closed, and the girdle only taken off after a good compressing bandage had been applied.

Professor Hajak, of Vienna, says smokers are less liable to diphtheria and other throat diseases than non-smokers in the ratio of one to 28. Dr. Schiff tells us that smoking is forbidden in bacteriological laboratories because it hinders the development of the bacteria.—*Medical Record*.

Abstracts of British & Foreign Journals.

THE USE AND ABUSE OF THE DENTAL ENGINE.

By MARK G. McELHINNEY, Ottawa, Ont.

Amongst the many appliances necessary to the dentist the engine is one of the most important. It can accomplish easily and in a short time what, by hand, would require considerable force and a much longer time. Having, as it has, so many good qualities, and offering, as it certainly does, so many short cuts on so many operations, it is not surprising that it should have become almost universally abused. Not only is the engine itself wrongly treated, but it is used in operations where, in the common interest of humanity, it has no business. A dental engine is a piece of fine machinery, and must be treated as such. It should not be subjected to strains greater than it is intended to bear. It will carry a certain size of tool in the hand piece, according to the strength and stiffness of the arm, cable or cord attachment, and if a larger tool is used the engine will suffer. It will stand a certain pressure upon the tool, and if the pressure be increased unduly there will be trouble. The chief wrong uses to which the engine is put are grinding up artificial teeth and boring holes in metal.

One of the tests of a good mechanic is delicacy in handling tools. A true mechanic will apply just the required amount of force to accomplish the object, and not a particle more. Moreover, a skilful mechanic always maintains a counteracting force which is used to guard against the slipping or breaking of the tool. It is this guarding that enables the tool to cut so far and no farther. There is no tool used in dentistry that requires such skilful handling as the dental engine. Mechanical skill is the foundation of dentistry, and no one can hope to excel who is incapable of mechanical training.

I have seen a dental engine used upon artificial teeth with pressure sufficient to grind an axe, the engine sticking, jerking and slipping until I expected to see it fall to pieces, like the parson's one-horse chaise, of old time story. An engine used like this will be a complete wreck in six months, and then the dentist will abuse the makers because it will not do

the work of a small machine shop. A good engine will, with good treatment, last a long time, probably as long as the ordinary dentist lives to use it. A dental engine must be used with continual regard towards its lightness and delicacy of mechanism. It must be cleaned, oiled and adjusted as often as is required to keep it at its best. It requires very little oil, and that must be of good quality. Great care must be exercised in taking it apart. There is nothing so unsightly as battered nut-corners and scratched screw-heads, whether they be on a dental engine, a gun or a bicycle. It must be borne in mind that set screws and nuts are powerful levers, and can exert a force far greater than the material of themselves and surrounding parts can bear. If a dental engine is allowed to get loose and unsteady, it entails much more suffering upon the patients, and, therefore, the condition of a dentist's engine is an index to his consideration for his patients.

The abuse of the engine in operating is a far more serious part of the question. It requires as great or even greater skill to use the engine than it does to work by hand, and yet it has been remarked that the poorer the operator the greater use he makes of the engine. It has also been noticed that in the dental colleges the engines were always in greatest demand by those who were the least fit to use them, and consequently the suffering caused thereby was much greater than necessary. Clinical instructors should pay particular attention to the manner of use of the engine by students, especially as few students have much to do with that instrument before entering the infirmary.

That the engine is abused even by dentists is shown by the fact that dentists, as a rule, have a horror of it, and many neglect their teeth on account of their fear of its use. A good general rule may be deduced from experience, and that is, never use the engine on sensitive teeth except where the requirements of the case demand heroic treatment. By sensitive teeth is here meant those having sensitive dentine and those sore from periosteal and kindred troubles. Many persons have a positive horror of the buzzing sensation of the engine, and it is wilful and unnecessary cruelty to use it where any other means are possible. To accomplish many operations by hand certainly takes more time, and time is money, but reputation is money also, and in the long run the balance will be in favour of the dentist who avoids causing unnecessary pain. In ordinary superficial cavities well

shaped and sharp excavators will accomplish the work in a very short time, almost painlessly, while a bur used even very carefully is liable to cause some inconvenience. Much of the discomfort attendant upon dental operations is not so much in actual suffering as in the anticipation of it; hence, the dentist should avoid the use of whatever will, by its intricate and formidable appearance, suggest the possibility of pain. The engine is a most formidable instrument, and to some patients suggests the horrors of the inquisition, therefore it behoves the dentist to keep the aforesaid formidable instruments as much in the background as possible.

The later models of electro dental engines, by their compact form and general innocent appearance, are a great improvement in this respect, provided always that the wires are concealed, for few things produce such creepy feelings in the lay mind as the "deadly wire."

In some cases the use of the engine is advisable, and is often in such cases less painful than hand work. For instance, an abscessed tooth containing a filling and extremely sensitive. If the tooth is to be saved it must be opened through the canals, and a hole must be made through the filling to the pulp chamber. To drill by hand would require time and much pressure, while the engine will do the work promptly and with a minimum of pressure. There certainly will be pain more or less intense, but it is the sooner over. In excavating large cavities that are not sensitive, opening pulp-chambers when the nerve is dead, polishing fillings, cleaning teeth and preparing for crown and bridge-work, the engine is in its legitimate sphere, and is of inestimable value to both dentist and patient. It saves time, energy, patience and temper, and renders the dentist's bread and butter a little the less hard earned. To give up the dental engine would be to retrograde half a century. It is a priceless boon and truly worthy of this age of steam and electricity.

Dominion Dental Journal.

Where we have a proximal surface of a tooth to be restored, it should be contoured carefully. But where half or two-thirds of the crown is gone it is unjust to the patient to build it up piece by piece.—*Items of Interest.*

IRREDUCIBLE DISLOCATION OF THE JAW.

By Dr. R. H. M. DAWBARN, New York.

For the reduction of a dislocation of the lower jaw the usual plan is to depress the rear part of the lower jaw while lifting the anterior part, making the thumbs, wrapped in a handkerchief, a fulcrum. As soon as the articular condyle is forced below the eminentia articularis the temporal muscle will at once draw the lower jaw back to its normal place. Sometimes stout corks placed between the molar teeth are used instead of the wrapped thumbs. In one case in my experience, sent to me by a doctor in Bridgeport, the patient for some months had had an irreducible double forward dislocation of the lower jaw. Reduction had been attempted in the usual way by several excellent surgeons, among them Dr. Bacon, of New Haven, the patient being under general anæsthesia meanwhile; therefore I did not waste time in repeating these efforts. Instead, I made two incisions horizontally just below the zygoma, exposing the articular condyle in its false position; and then, by introducing a stiff instrument and using leverage against the tubercle of the zygoma, I succeeded in accomplishing the reduction. Of course, leverage had to be applied on both sides and through both cuts. The result was excellent, only two thread-like scars now showing that anything had been done. This operation is an exceedingly rare one. Hamilton "On Fractures and Dislocations," for instance, does not even allude to the possibility that a cutting operation may be needed in old cases of this difficulty.

GIVE US A REST.

By F. S. JAMES, Tracy, Minn.

The old saying which we have all heard for years, "all work and no play makes Jack a dull boy," applies to us as well as those in other vocations. There are many ways of taking a rest. Some need quiet; some merely a change of

scenes, while others seek rest by climbing mountains or other active sports ; however this may be, we will, I think, all agree that it is good for an individual to get away from himself occasionally ; leave the cares of the office at home, and seek health and pleasure, or both, and at the end of the year he will not only find himself better off physically, but financially as well.

Sir Andrew Clark, the celebrated English physician, defines health as that state in which the body is not consciously present to us ; that state in which work is easy and duty not over great ; that state in which it is a joy to see, to think, to feel, and to be.

There are hundreds of men in the dental profession who think they cannot possibly close their offices for a day, not even to attend a society meeting ; day after day, year after year they plod along and leave a name to live, but are dead to the profession, the world and all mankind, except, possibly, a few who, through the busy din of life happen to stumble upon them. They identify themselves with nothing ; they pass along the silent paths of obscurity as if they had no object in life or purpose in view ; they drop their bodies into the dust, and but few know of their death because they are not identified with the living and active, and their loss is seldom mourned outside their immediate surroundings.

The past, and even the present system of education, to a certain extent, has wanted one class of men to do the thinking, and the other class to do the working ; the one is called the gentleman, the other the operator. Whereas the workman ought to be thinking, and the thinker often to be working, and both should be gentlemen in the true sense of the word. As it is, or has been, both have been made ungentle—the one envying, the other despising the other—and the mass of Society is made up of morbid, unhealthy thinkers, and miserable workers. It is only by hard work that thought can be made happy, and we, as a profession, should remember this and be more liberal ; then there will be less pride felt in the peculiarity of our calling, and more in the excellence of our achievements.

Now then, if we are to be rational and intelligent men, let us strive to keep abreast with the times. With the aid of our societies, and of dental journals, there is no excuse for a dentist who will not keep himself posted in all that is going on

in his special calling. If we are to receive any great good, it is necessary to have something which will stimulate us.

It has been said that if a man would be wise he must "think, think, think," but it is hard to think energetically and persistently without something to stimulate thought, and nothing in this line is better than association with others in the same calling.

Dentists who attend society meetings are benefited in this and many other ways as well, and those who do not avail themselves of this manner of stimulation (or rest, we might call it, for that is what it is to most of us), may continue along in the same old rut, and, professionally, they become fossils. This may be their misfortune, but it is more often their own fault, and their intelligent clients are sure to hold them responsible accordingly.

When it is a man's misfortune that he cannot avail himself of the best means of improvements he is to be pitied, for he is an object of sympathy, but in most cases the inability is more imaginary than real. I say, and you will probably agree with me, "Give us a rest."

The Dental Review.

A tale is told of a recent examination for the L.D.S.—we will not say where—in which one of the microscopic specimens was some frog's blood. Each student upon being shown the specimen described it with such rapidity and accuracy that the suspicions of the examiner were aroused. Feeling sure that an early candidate had informed the others what the specimen was, the examiner changed the slide, substituting some blood drawn from his own finger for that from the frog. The next candidate who presented himself was asked what was under the microscope. "Blood, sir," he replied with assurance. "What blood?" was the query. "It is the blood of a reptile, sir," he answered glibly. What the examiner's feelings were on hearing himself thus described, is not stated.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The following discussion took place upon Mr. Tomes' communication published at page 529.

Mr. F. J. BENNETT said there was one point he wished to ask Mr. Tomes, viz., whether he had investigated anything beyond amalgam, a mixture of a metal with mercury. A most interesting account had recently come to his notice of investigations carried out by Professor Roberts-Austen, who appeared to have been working at alloys at different temperatures, in the fluid state, and recently in the solid state, and had obtained most remarkable results. The statement which he found in the scientific column of the weekly *Graphic* was that the Professor took cylinders of lead about three inches long, attaching to the end of those cylinders a small cylinder of gold of similar diameter. Keeping those two cylinders at a temperature far below the melting point of lead—in fact very slightly raising the temperature—after three days he found the astonishing result that particles of gold had found their way right up to the top of the lead cylinder in considerable quantity. It occurred to him (Mr. Bennett) that possibly some of the very successful and happy results recorded by Mr. Tomes might be helped on by extending their knowledge as Professor Roberts-Austen had done to alloys, by which they might find that things which were considered peculiar to amalgams might also be the common property of alloys. He had endeavoured to find a more full and accurate account of this the Bakerian lecture of the Royal Society, but it did not seem to have appeared at present in any scientific magazine.

Mr. H. BALDWIN said this migration of metals, such as lead and gold, which were solid at ordinary temperatures, seemed to make it almost certain that Mr. Amos Kirby's explanation of the alteration that amalgams underwent, was correct. Mr. Amos Kirby had always set down the alteration which took place in amalgam to a warpage and not necessarily to a contraction, the warpage being due to a rearrangement of the mercury throughout the mass of amalgam; that is to say, he contended that where an amalgam was mixed with more mercury at one end of it, or at one portion

of it, than at another, even after the amalgam had set the mercury would re-distribute itself evenly over the whole mass, and that the portions of the amalgam from which the mercury went would shrink, and those portions to which it went would expand, causing an alteration in shape which was sufficient to crack a glass tube and so forth, without necessarily any alteration in the specific gravity.

Mr. REINHARDT wished to ask a question as to the impress of the wire on the filling. Professor Black, when speaking about the flow of amalgam, ascribed it, as he understood, to crevices. He would ask Mr. Tomes whether there were any crevices in the filling on which he pressed the wire. Also as to the rapid setting amalgam he would ask if Mr. Tomes remembered that many years ago it was suggested that the proper way of using amalgam was to use it very dry, in a sort of powder, and pack it with hot instruments.

Mr. GEORGE CUNNINGHAM said in reading the excellent paper of Professor Black on this subject, they ought still to remember the wonderful work done by Mr. Kirby. Mr. Kirby had in his collection a very large number of experimental blocks of amalgam, and had been able, as Mr. Baldwin said, to prevent their contraction, to keep them straight, or to make them bend either one way or the other according to the distribution of mercury in the mass. The series of experiments were very interesting, and he called attention to them because it was a pity that Professor Black, in writing on the subject, appeared to be unaware of them. Since going into the matter with Mr. Kirby himself many years ago, he (Mr. Cunningham) certainly came to the conclusion that it was advisable to adopt the Kirby method, and he had continued to do so ever since; first of all using an amalgam, the constituents of which he knew exactly, and further, always using it as far as possible under what might be termed scientific conditions, that was to say, as nearly as practicable always under the same conditions, a double tube mix of accurately weighed amounts of the alloy and mercury. With regard to the effect of heat on amalgams, the only point of interest he had to communicate was with regard to copper amalgam. He occasionally found it advisable to have a copper amalgam that would set quickly. This was done by mixing a certain proportion—about 5 per cent—of precipitated silver with the mass. He found, however, after a time that the surface of such an amalgam filling became rough, owing to the formation of not temporary but permanent

beads on the surface : and as there was no apparent advantage to be gained, he had discarded the addition of the precipitated silver. His colleague, Mr. Lennox, one day in discussing the matter suggested that there was a very much more simple way of attaining the desired result, viz., to take two masses of copper amalgam and raise them to two different temperatures, crushing them together in the mortar and mixing thoroughly ; this certainly gave an amalgam which would set with considerable rapidity. On one point he thought Mr. Kirby would have to alter his mind, and that was as to warpage being evidence in favour of the so-called spheroiding of amalgam, although certain experiments that he (Mr. Cunningham) made some years ago in that direction had failed to convince him on that point. Under the advice of an expert he found the best way of testing a permanent level surface on fillings with various kinds of amalgams was by using them as mirrors and observing the reflections in them of parallel straight lines. There was not the slightest appearance of any curvature at any time, although the fillings referred to had been under observation for ten years, if not more. The question of the flow of the amalgam brought forward by Professor Black was of extreme interest from a practical point of view, and served, he thought, to explain a great many of those bulging surfaces which were seen in certain forms of amalgam filling.

Mr. PATERSON asked if the reference in the paper to the treatment of amalgam in a state of crystallisation might be repeated.

Mr. C. S. TOMES, in reply, said there were one or two things that had been suggested that he should like to add. Mr. Paterson suggested that he had hardly made his meaning sufficiently clear as to the desirability of burnishing the amalgam while it was setting and even after it had set, the idea being that that prevented crystallisation taking place, or at all events burnished down the crystals as they were forming, and so ensured a satisfactory surface. Mr. Cunningham pointed out that Professor Black had not quoted Mr. Kirby's researches. Dr. Black did not quote anybody's researches as a general rule. That was one of the faults of his paper that he started with the whole question *tabula rasa*, not only in respect to amalgams, but in respect to other things. As to amalgams taking on a spheroidal form, he (Mr. Tomes) never had believed in it and still less believed in it now. There was not the smallest evidence of a scientific

kind in favour of the idea. He did not believe that crevices found at the sides of amalgam fillings were due to it in any way. They were due to the edges of the amalgams being brittle, and to the amalgams not being in absolute apposition with the edges of the cavity when they were set, even if they were before. This was very likely due to the pushing out of crystals from the surfaces.

Mr. Cunningham also rather accepted Dr. Black's idea that the changes found in amalgams were due to "flow." The flow of amalgams was an extremely interesting thing, and bore very much upon the investigation of the subject, but he doubted whether it had anything to do with what happened in the mouth. The flow of an amalgam as far as they knew anything about it, was a thing which took place under very prolonged and considerable pressure, and he doubted very much whether results could be got by the intermittent influences happening in the mouth. It would be an interesting experiment to rig up some sort of arrangement by which an amalgam could be subjected to intermittent and irregular pressure; but so far as any experiment as to flow had yet gone, he did not think there was any reason to suppose it would happen in the mouth. They had been reminded of the old method of packing the amalgam with hot instruments. That was a very good method as far as it went. And what he had been doing lately pointed to its having been a better method than most others. They probably got in that way a very fairly rapid setting almost under the hand, and that was what they should aim at. The experiments to which Mr. F. J. Bennett alluded, made by Professor Roberts Austen, were exceedingly interesting, but they had not yet been published in a form in which one could make much use of them. Of course they pointed to Mr. Kirby's idea being right, that if an amalgam was irregular in its composition, and did contain in certain portions of its substance more mercury than it did in others, it would be extremely likely to re-arrange itself.

The thanks of the Society having been given to the readers of papers, the meeting adjourned.

Dental News.

GENERAL MEDICAL COUNCIL.

June 6th.

Sir Richard Quain in the chair.

The case of Clement Henry Sanders came before the Council on Saturday, June 6th.

Mr. Sanders had been summoned to appear before the Council to answer the following charge, as formulated by the Council's solicitor :—

"That, being a duly registered Dental Practitioner, you act as cover of and by lending your name and assistance enable an unqualified and un-registered person named MÜLLER to carry on a Dental Practice and to Practise Dentistry and Dental Surgery in all respects as if he were duly qualified Dental Practitioner."

The REGISTRAR read the following Report from the Dental Committee on the facts in regard to this case :—

The case of CLEMENT HENRY SANDERS having been referred to them by the EXECUTIVE COMMITTEE to ascertain the facts in regard to such case, the DENTAL COMMITTEE find the facts to be as follows:—That CLEMENT HENRY SANDERS was registered in the *Dentist's Register* on August 13, 1884, as having been in practice before July 22, 1878, and his address in the *Dentists' Register* is 88, Queen Street, Exeter. That a practice of Dentistry for gain is carried on at 88, Queen Street, Exeter, in the name of the said CLEMENT HENRY SANDERS. That CLEMENT HENRY SANDERS has a Dental Surgery at Okehampton. That CLEMENT HENRY SANDERS carries on a Dental Practice at Aldershot. That CLEMENT HENRY SANDERS visits Exeter once every ten days or a fortnight, where he sometimes remains for two or three days at a time; and that the practice at Exeter is carried on in his absence by an unqualified person named MÜLLER. Mr. SANDERS gave an undertaking to place a qualified Assistant in charge of the practice at Exeter and Okehampton at once.

Mr. Johnston Watson appeared for Mr. Sanders, accompanied by a representative of Messrs. Preston, and Mr. R.W. Turner, instructed by Messrs. Bowman & Co., appeared for the British Dental Association, the complainants. Mr. Farrer, the Council's solicitor attended to advise the Council on the case before it, and Mr. Muir Mackenzie attended as Legal Assessor.

Mr. JOHNSTON WATSON said that Mr. Sanders was not present, but had made a further affidavit. The learned Counsel was proceeding to comment upon the merits of the case when the President said it would be more to the point if

he could inform the Council whether Mr. Sanders had fulfilled the promise he had made.

Mr. WATSON said his client had done so. He wished to point out that the charge which was preferred against Mr. Sanders was not the charge which was found by the Committee to be proved. He would ask the Council to bear that in mind when they came to deal with the facts. The charge preferred against him was that he permitted an unqualified and unregistered person named Müller to carry on a dental practice in all respects as if he were qualified. The Committee had in fact found that he (Mr. Sanders) did himself carry on a practice at Exeter, and that he visited Exeter once in every ten days or a fortnight, where he sometimes remained for two or three days at a time, and that the practice was carried on in his absence by Müller. The practice was not carried on by Müller for his own benefit, and therefore he was not sheltered in any way by Mr. Sanders, but that while the latter was carrying on his business in Aldershot, as he did part of the week, he permitted his assistant to take some part in the business. He would next call attention to an affidavit of an errand boy, Charles Avery, with regard to what had occurred since the hearing before the Committee. Mr. Sanders had given an undertaking that he would place a qualified assistant in charge of the practice at Exeter and Oakhampton at once, and he thought he was in a position to show that that had been done. Whether Mr. Sanders had done so or not, could not, he supposed, affect that gentleman's position, unless the Council thought that the charge of infamous conduct was proved against him, when they might desire to know what his conduct has since been, for the purpose of giving him indulgence. He did not abandon his contention that there was nothing in the Report which in the finding of the Council could amount to infamous conduct in a professional respect. The affidavit of the errand-boy showed there had been some delay, but there was a reason for it. Avery had made his affidavit on the 22nd May, and it was to the effect that for ten weeks preceding the 18th April, (when he left) he had been employed at 88, Queen Street, Exeter, and during that time the only persons engaged in the business besides Mr. Sanders were the assistant Müller and an apprentice who had been there about three years. And the apprentice who was at first engaged in the business had left after Avery had been there a week. Mr. Sanders did not attend on more than four separate occasions—so the

affidavit said,—and on neither occasion did he stay more than four days. Upon that statement reaching the hands of Mr. Sander's solicitors, that gentleman was communicated with, and he had made an affidavit in which he set out what he had done since the 25th February, and the difficulty he had in finding a registered practitioner willing to take his place at Exeter. Mr. Sanders was now at Exeter, and the affidavit made on the 5th June, stated that after the 25th February he had taken every step to carry out his undertaking. He entered his name in the books of the Dental Manufacturing Company as being in want of a qualified assistant, with the result that in a week he had three or four names sent to him, and he entered into correspondence with a gentleman residing in Rochester, with a view to his joining him as a partner, to conduct the practice there and at Okehampton. That fell through, and he entered into communication with Mr. George Gilbert Liversidge, of Greenwich, a registered dentist, and ultimately engaged him as an assistant. Mr. Liversidge came at the earliest possible moment, which was the 29th April. From that time until the 17th May, Mr. Liversidge had managed the practice at Exeter and Okehampton, on which date he left to manage the practice at Aldershot, he (Mr. Sanders) himself going to Exeter, where he intended to remain. From the 25th February to the 2nd March he was in London and Aldershot endeavouring to engage a duly qualified assistant. The next statement was important because it apparently showed that Avery's affidavit was incorrect in one particular. Mr. Sanders said that he went to Exeter on the 3rd March, to manage his practice, and from that time to 29th April he was in residence at 88, Queen Street, on an average four days in each week, personally managing the practice. The learned Counsel said it would be remembered that there was a practice at Okehampton which Mr. Sanders conducted at the same time. Mr. Sanders said he had used every endeavour to honestly and *bona fide* carry out his undertaking, and should continue to do so in the future. There could be no dispute that since the 29th April a properly qualified person was in charge at Exeter, and Mr. Sanders had explained the short delay between the 25th February and the 3rd March. The terms of the undertaking were that Mr. Sanders would at once act, but of course he would have a reasonable time given him to find a capable assistant within his means. The learned Counsel believed it was in the contemplation of the Council,

but certainly it was in the contemplation of the parties, that if Mr. Sanders did put a person in at Exeter he would also carry on business at Okehampton. Even if the Committee were to think the Report would justify their taking proceedings against Mr. Sanders, and striking him off the Register, they would probably think under the circumstances that he was entitled to have that indulgence which he (the learned Counsel) thought the Committee held out to him to some extent. He supposed they would not have said a word about an undertaking unless they were prepared to give due effect to any conduct on the part of Mr. Sanders since the 25th February. Under those circumstances he asked the Counsel to extend indulgence to his client, remembering that now he had acted in the way the Counsel desired, and that according to his affidavit there had been no such delay as would disentitle him to have indulgence. Under the circumstances he submitted that the Council would be properly advised not to take any further steps against Mr. Sanders.

Mr. R. W. TURNER said that the case was brought before the Committee of the Council by the British Dental Association, who had stated that they did not desire to press in any way unduly the charge, but to lay the facts before the Council in order that dentists might learn that the resolutions of the Council were not to be treated as a dead letter. He need not go into the facts of the case, for with all respect to his learned friend's argument he thought there was ample on the finding for the Council to find covering if they desired to do so and to find infamous or disgraceful conduct. In answer to the affidavit of Avery it was extraordinary that Mr. Sanders should have only filed his affidavit and should not have been present at the hearing of the case, which must affect him so materially. It would be in the recollection of those gentlemen who were present at the hearing of the matter before the Committee that Mr. Sanders stated that there was somebody ready to go down there and then into the practice, and that person would go down on the following Monday and the Committee found that he was going to act at once. No one did go there till the 29th April. With regard to Mr. Sanders' zeal to employ a qualified man, the case was originally fixed to be heard on the 25th November, and was then adjourned till the 25th February. Nothing was done in the meantime and nothing was done till the 29th April. It was for the Council to say whether that was complying at once and whether they could be satisfied with an

undertaking which he understood was usual in such cases, that Mr. Sanders would in future conduct himself in an honorable and professional manner when it had taken him all that time to get a qualified man, knowing as they did how many qualified men there were about.

Strangers then withdrew, and on their re-admission,

The PRESIDENT announced that the Council had found that the charge made against Mr. Sanders had been proved. The Council could either pronounce judgment at once, or postpone it until next session. It had been resolved that the further consideration of the charge against Mr. Sanders be adjourned till the next session of the Council in November, when the Council would expect him to appear in person and give a satisfactory explanation of his past and present conduct.

June 8th, 1896.

Sir Richard Quain, President, in the chair.

The REGISTRAR read the following communication from the Privy Council Office in regard to the application of Mr. A. P. Merrill for registration as a Dentist, together with observations prepared in reply :—

(a) Letter from the PRIVY COUNCIL OFFICE.

76,556.

“ Whitehall :

“ February 21, 1896.

“ SIR,—I am directed by the LORDS of the COUNCIL to transmit to you the accompanying copy of a Petition of Mr. ALFRED PERKIN MERRILL, a Dentist practising at Melbourne, in the Colony of Victoria, appealing to the PRIVY COUNCIL against the decision of the GENERAL COUNCIL of Medical Education and Registration of the United Kingdom, not to place his name on the Dentists' Register, together with a copy of an affidavit sworn by Mr. MERRILL in regard to his qualifications as a Dentist, and I am to request that, in laying the same before the GENERAL MEDICAL COUNCIL, you will move that Body to furnish their Lordships with any observations they may desire to offer upon the Appeal of Mr. MERRILL.

“ I am, Sir,

“ Your obedient Servant,

“ C. L. PEEL.

“ *The REGISTRAR of the*

“ GENERAL MEDICAL COUNCIL.”

(b) PETITION TO THE PRIVY COUNCIL.

(“ Copy).

“ TO HER MAJESTY QUEEN VICTORIA, Her Heirs and Successors in Her MAJESTY'S PRIVY COUNCIL.

The ninth day of January, 1896.

"May it please your Majesty and the Right Honourable the Lords of the Judicial Committee of the PRIVY COUNCIL.

"THE HUMBLE PETITION of the undersigned ALFRED PERKIN MERRILL, of 52, Collins Street, Melbourne, in the Colony of Victoria, Dentist, seteth forth:—

"1. That I am a Registered Dentist of the Colony of Victoria, and I also hold the Diploma of D.D.S. of the Philadelphia Dental College, U.S.A.

"2. I obtained the said Diploma in the year 1866, and I was, moreover, practising in the British Colonies years before the English Dental Act came into operation, viz., for some months in Canada in the year 1862, and in the Barbadoes in the year 1864.

"3. After obtaining the Diploma of Doctor of Dental Surgery (D.D.S.) at the Philadelphia Dental College, I practised as a Dentist at Montreal, Canada, for three months. Thence I went to New York, U.S.A., where I practised as a Dentist for some years. I became Secretary of the Odontological Society of New York, and I was also Professor of Operative Dentistry and Dental Histology in the North Western Dental College, Chicago. I resigned this position on account of ill-health.

"4. Though I am an American citizen by birth I have spent many years of my life in the British Colonies. I have lived for years in Canada, and am fully acquainted with all English modes of Dentistry. I now hold a leading position as a Dentist in Melbourne, Victoria.

"5. Being desirous of being registered as a Dentist in Great Britain, I applied to the GENERAL MEDICAL COUNCIL of Great Britain for registration, and forwarded an affidavit (of which paper marked "A" is an exact copy) in support of my claims.

"6. The GENERAL MEDICAL COUNCIL refused my application, and I forward herewith an exact copy of their reply (which was addressed to my solicitor, Mr. ERNEST JOSKE), on paper marked "B."

"7. And I do myself the great honour to appeal against this decision of the GENERAL MEDICAL COUNCIL, and humbly pray that you will in your wisdom and goodness direct such GENERAL MEDICAL COUNCIL to recognise my Diploma, and to register me accordingly as a Dentist of the United Kingdom.

"And your Majesty's servant will for ever pray.

"(Signed) ALFRED PERKIN MERRILL, D.D.S.

"Melbourne, Victoria,

"January 9, 1896."

(c) COPY OF AFFIDAVIT.

"I, ALFRED PERKIN MERRILL, of 52, Collins Street East, Melbourne, Victoria, make oath and say,

"That I am a *Registered Victorian Dentist*, and hold the Diploma of D.D.S. of the Philadelphia Dental College, U.S.A.

"I obtained my Diploma in the year 1866, but I was previously to that year practising as a Dentist in the British Colonies, viz.: in the Barbadoes, where I followed my profession as a Dentist for close on twelve months, and previously to that I was for some months practising as a Dentist in Canada.

Upon obtaining my Diploma of D.D.S. I practised as a Dentist in Montreal, Canada, for three months. I proceeded thence to New York, where I practised as a Dentist for some years. I was formerly Secretary of the Odontological Society of New York, and I was also appointed

Professor of Operative Dentistry and Dental Histology in the North Western Dental College, Chicago. I resigned this position owing to ill-health.

"I have spent many years of my life in the British Colonies, and am fully acquainted with all English modes of Dentistry. I conduct my practice in a strictly professional manner.

"I am a naturalized subject in Victoria of her Majesty, Queen Victoria.

(Signed) ALFRED PERKIN MERRILL.

"Sworn before me this

"20th day of February, 1894.

"(Signed) WILLIAM FRANCIS, J.P."

(d) OBSERVATIONS IN REPLY.

"1. The 8th Section of the Dentists' Act 1878, provides that a person who is not domiciled in the United Kingdom, and shows that he holds some recognised Certificate (as defined in the Act) granted in a British possession, and that he is of good character, is to be entitled without examination in the United Kingdom to be registered as a Colonial Dentist.

"2. The 9th Section of the same Act provides that where a person who is not a British subject shows that he obtained some recognized Certificate (as defined in the Act) granted in a foreign country, and, that he is of good character and continues to hold such Certificate, is to be entitled without examination in the United Kingdom to be registered as a Foreign Dentist in the *Dentists' Register*.

"3. By Section 10 of the Act the Certificate granted in a British possession, or in a foreign country, which is to be deemed such a recognised Certificate as is required for the purposes of registration is to be such Certificate, Diploma, Membership, Degree. &c., or other Title Status or Document *as may be recognised for the time being* by the GENERAL COUNCIL, as entitling the owner to practise Dentistry or Dental Surgery.

"The following facts, in relation to the application of Mr. MERRILL for registration are material for the purposes of inquiring whether he satisfies the foregoing statutory conditions.

"4. In the year 1862 and 1864 Mr. MERRILL, being at the time an American citizen, practised Dentistry in Canada and in Barbadoes.

"5. In 1866 Mr. MERRILL obtained from the Philadelphia Dental College his Diploma of D.D.S., and subsequently for some years practised as a Dentist, in New York.

"6. In the month of April 1890, Mr. MERRILL was registered in the *Dentists' Register* of the Colony of Victoria, and, at the same date, which is not stated in the papers, Mr. MERRILL became a naturalized British subject in Victoria.

"7. As regards the American Diploma held by Mr. MERRILL, in the year 1879, the GENERAL COUNCIL caused very full enquiries to be made in reference to the courses of study and examinations required by several of the Foreign and Colonial Dental Colleges and Institutions with the view of ascertaining whether the Certificates or Diplomas of those Institutions furnished sufficient guarantees of the possession of the requisite knowledge and skill for the efficient practice of Dentistry; and amongst the diplomas or certificates which were the subject of inquiry were those granted by the Dental College of Philadelphia. The GENERAL COUNCIL ascertained that in this Institution, as in several others, there was no preliminary examination, that two years only of professional study were required, and that the examination in each was conducted solely by the Teachers and Officers of the Institution. The GENERAL COUNCIL therefore, having regard to the requirements which

are necessary for diplomas in Dentistry in the United Kingdom, which comprise a preliminary examination and four years of professional study, felt unable to recognise the Certificate of the Philadelphia Dental College as one which ought to entitle the holder to registration as a Foreign Dentist in the *Dentists' Register*.

"8. As regards the registration of Mr. MERRILL in the *Dentists' Register* of Victoria, the GENERAL COUNCIL have not hitherto been able to recognise that a person who is so registered, but who does not possess any Colonial diploma or licence, is the holder of a Certificate which furnishes sufficient guarantees of the possession of the requisite knowledge and skill for the efficient practice of Dentistry or Dental Surgery.

"9. Mr. MERRILL apparently is applying for registration as a Colonial and not as a Foreign Dentist. The possession of the Foreign diploma, even if it were recognised would not entitle Mr. MERRILL to be registered under s. 8 of the Act as a Colonial Dentist.

"10. The only qualification therefore which Mr. MERRILL possesses, on which he can found an application for registration as a Colonial Dentist, is the fact that he is registered in the *Register* of Victoria. But as already stated, the GENERAL COUNCIL have not been able to, and do not recognize registration in this Colonial Register as of itself entitling an applicant to be registered under s s. 8 and 10 of the Act.

March 20, 1896."

Sir WILLIAM TURNER moved "That the observations prepared by the Council's legal adviser on the application of Mr. Alfred Perkin Merrill be adopted and forwarded by the Council to Her Majesty's Privy Council."

Mr. WHEELHOUSE seconded the motion, which was agreed to

June 9th, 1896.

Sir Richard Quain, President, in the chair.

The following Report from the Dental Committee was received:—

DENTAL EDUCATION COMMITTEE.

REPORT ON A COMMUNICATION FROM THE BRITISH DENTAL ASSOCIATION.

(Presented to the General Medical Council on June 3, 1896.)

MEMBERS.—Mr. Bryant, (Chairman), Mr. Carter, Sir Philip C. Smyly, Dr. Cameron, Dr. Charles Moore, Dr. Fraser.

The following was the communication from the British Dental Association, referred by the General Council to the Dental Education and Examination Committee, on November 29, 1896 (*Minutes*, Vol. XXXII, . 143):—

"British Dental Association,

"(*Incorporated June 3, 1880*),

"40, Leicester Square, London, W.C.,

"November 25, 1895.

"DEAR SIR,—I beg to submit the following matter of urgency to the attention of the MEDICAL COUNCIL at its present Session.

"JOSEPH STROMIER of Glasgow, having obtained the D.D.S. Diploma of Michigan University, U.S.A., presented himself, last October, for Examination at the Faculty of Physicians and Surgeons, Glasgow, for the L.D.S. Diploma. He submitted as his dental curriculum that of the Michigan College, and upon that curriculum he was admitted to the L.D.S. Examination of the Faculty. He failed in the Examination, but it is his intention to present himself again in April next.

"The point I wish to draw the COUNCIL's attention to this is—the Faculty of Phys. and Surgs. Glasgow, *accepted the dental curriculum of Michigan*, a curriculum no longer recognised as satisfactory by the MEDICAL COUNCIL, in lieu of their own, and admitted STROMIER to Examination. In doing so, I venture to submit that the action of the Glasgow Faculty is *ultra vires*; and I beg the COUNCIL to take steps, as they may deem necessary, to prevent a recurrence of such action.

"I am, dear Sir,

"Yours truly,

"W. B. PATERSON,

"W. J. C. MILLER, Esq., Registrar."

"Hon. Secretary."

In answer to an enquiry sent by the Registrar, the following explanatory communication was received from the Faculty of Physicians and Surgeons of Glasgow in reference thereto:—

"Faculty of Physicians and Surgeons,

"Glasgow: April 28, 1896.

"SIR,—I have to acknowledge receipt of your communication of yesterday, with a printed copy of a letter from Mr. W. B. Paterson, Honorary Secretary of the British Dental Association, of date 25th November, 1895, addressed to you as Registrar of the GENERAL MEDICAL COUNCIL, in which complaint is made regarding the alleged action of this Faculty in admitting to the Examination for the Licence in Dental Surgery, Mr. JOSEPH STROMIER, inasmuch as by so doing they accepted the Dental Curriculum of Michigan University, such action being stated to be *ultra vires*.

"The facts of the case, as gleaned from the Faculty records, are as follows:—

"1. By letter of date 31st August, 1895, Mr. STROMIER intimated to me his intention of entering for the L.D.S. Examination, at the same time submitting evidence that he had passed a recognised Preliminary Examination in 1891, and that he had been registered as a Dental Student by the GENERAL MEDICAL COUNCIL in January, 1892. In his letter he applied for exemption from examination in Anatomy, Physiology, and Chemistry, in consideration of his possessing the Dental degree of Michigan University. On 3rd September, 1895, he was informed by letter that his claim for exemption from any part of the Examination was disallowed; and on 28th September he entered for the first examination only, having duly subscribed evidence that he had attended the Courses prescribed for the Examination. He failed to satisfy the Examiners, and was remitted to his studies for six months.

"2. On 28th March, 1896, he re-entered for the First Examination, at the same time entering provisionally for the Second Examination,—

that is conditionally on his passing the First Examination. In doing so, as required by the Regulations, he submitted the Schedule of his entire Course of Study, of which the period of three years and nine months were certified as attended at the School of Ann Arbor, being that of the University of Michigan, and six months in Glasgow, all the entries being attested by official signature, in the Schedule, or by the production of separate Certificates. The Course of Study, as thus certified, was in several particulars in excess of the present requirements of the Faculty, and still more in excess of the requirements of 1892, when he began study. On this occasion he passed both the First and the Final Examinations, and was enrolled as a Dental Licentiate.

"3. Mr. PATERSON alleges that the action of the Faculty, which has been here stated in detail, was *ultra vires*, but he does not state how it was so. The only Resolution of the GENERAL MEDICAL COUNCIL which may be said to have any bearing on the matter appears to be that contained in Vol. XXX (p. 84) of their *Minutes*, suspending till further notice registration of the Certificates of the Dental Degrees of two American institutions, one of them being Michigan University. But, as I have stated, the Candidate in question obtained no advantage at this Board from his possession of the Michigan Degree. In this respect therefore there has been no violation of even the spirit of the Resolution of the GENERAL MEDICAL COUNCIL. It is true that the larger portion of his professional Education was obtained in the school of that institution; but the Faculty are not aware that either as regards Medical or Dental Education the GENERAL MEDICAL COUNCIL have passed any Resolution limiting the discretion of the Qualifying Bodies in regard to the recognition of schools either outside or within the United Kingdom. If any such limiting instructions have been issued, no copy of them appears to have reached the Faculty; and the GENERAL MEDICAL COUNCIL have only to draw the attention of the Faculty to them to secure their being carried into effect.

I am, Sir,

Yours obediently,

ALEXANDER DUNCAN,

"*Secretary.*"

"W. J. C. MILEER, Esq., B.A.,

"*Registrar of the General Medical Council.*"

REPORT BY THE COMMITTEE.

The DENTAL EDUCATION AND EXAMINATION COMMITTEE have considered the communication from the British Dental Association dated November 25, 1895, respecting the case of JOSEPH STROMIER, with the explanatory communication of the case received from the Faculty of Physicians and Surgeons of Glasgow, dated April 28, 1896; and they beg to report they do not find that there has been any irregularity in the action of the Faculty with respect to the Candidate named, seeing that he was only admitted to Examination for the L.D.S. on submitting evidence acceptable to that Faculty that he had duly attended the courses prescribed for the Examination.

THOMAS BRYANT,

Chairman.

Mr. BRYANT said a letter written by the British Dental Association to the Council was referred to the Committee. It was in respect to the Faculty of Physicians and Surgeons of Glasgow, who were accused of doing what they ought not to have done, but they gave such a satisfactory answer that the Committee reported in their favour. The accusation was evidently made in error. He moved that the Report be approved and sent to the Faculty of Physicians and Surgeons and also to the British Dental Association.

Sir WILLIAM TURNER seconded the motion, which was agreed to.

The REGISTRAR said an application had been received from Mr. J. D. Whittles (registered as Lic. Den. Surg. R. Coll. Surg. Eng. 1892), who wishes to be present at the Dental Examination of the Royal College of Surgeons in Ireland, in the same way as he has been present at the Examinations of the English College :—

“Mason College, Birmingham,

“April 25, 1896.

“DEAR SIR,—You will notice that I have been asking permission to be present at the Dental Examination (from the enclosed letter) to be held in about fourteen days hence in Dublin, and I should feel grateful if you would send me the necessary permission.

“I have been in the habit of being present at all the Dental Examinations in London for the last four years, and as I hold a Lectureship at the Birmingham School of Medicine, consider that I am entitled to be present.

“Your kind attention will be greatly esteemed by

“Yours faithfully,

“J. DENCER WHITTLES.

“W. J. C. MILLER, Esq., B.A., *Registrar.*”

“Royal College of Surgeons in Ireland, Dublin,

April 20, 1896.

“DEAR SIR,—With reference to your letter of April 1st, I am directed to inform you that our Examinations are only public to our own Fellows and Licentiates and Visitors accredited from the General Medical Council.

“Yours faithfully,

“ROB. H. WOODS, F.R.C.S.

“*Sec. of Council.*”

“DENCER WHITTLES, Esq., L.D.S.,

“Mason College, Birmingham.”

Sir WILLIAM TURNER said this was not a matter with which the Council had anything to do. It was entirely for the Institution itself whether it would admit A. B. or C. to its Examinations.

On the motion of Mr. Wheelhouse seconded by Sir William Turner it was resolved “That the subject is one on which the Council cannot interfere.

GOODMAN'S, LIMITED.

This Company was registered on June 9th, with a capital of £100,000 in £1 shares (60,000 pref.), to acquire, take over, and carry on the business of dentists, dental surgeons, and artificial teeth manufacturers, carried on by L. H. Goodman and V. A. Goodman, in London and the provinces, and to adopt an agreement with the said vendors. The subscribers are :—

| | Shares. |
|---|---------|
| E. M. E. Smith, M.R.C.S.E., 255, Cromwell Rd., S.W. | 1 |
| L. H. Goodman, 2, Ludgate Hill, E.C., dentist ... | 1 |
| M. Cooke, L.R.C.P., St. Benet Chambers, Fenchurch Street, E.C | ... |
| W. G. Campbell, 67, Plimsoll Road, Finsbury Park, dentist | ... |
| J. F. Vincent, L.R.C.P., 35, Upper Baker Street, W. | 1 |
| W. J. Julien, 51, Queen's Rd., Bayswater, dentist... | 1 |
| L. Dee, 26 Vereker Road, West Kensington ... | 1 |

The number of directors is not to be less than 3 and not more than 5 ; the subscribers are to appoint the first ; qualification, £100 ; remuneration, £100 each per annum, and £150 for the chairman.

APPOINTMENT.

A. P. Nixon, L.D.S. Eng., has been appointed House Surgeon to the Liverpool Dental Hospital.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Dear Sir,—In your issue of the 1st of September, 1894, you did me the favour of inserting a letter with respect to the practising of un-registered Dentists.

I had expected, and hoped that some response might have been

made by the older members of the profession, who would have been disposed to have favoured us with their views and ideas on the subject. As, however, no reply has come forth, I presume there is no remedy, and the men can be left in undisturbed possession of the field.

If the British Dental Association is not willing or able to cope with the matter, the sooner, to my mind, the Association is dissolved, the better.

I have, however, another grievance; is it wise—or, indeed, is it fair—for Dental Practitioners, to inundate our Profession by having so many pupils? In the town where I live, and practise, there are Dentists *taking in* young fellows wholesale, there can be no doubt with what object. The premium received pays rent, rates, and taxes, and I fear that this is the only interest the men have in their pupils' welfare, for immediately their articles expire, they are sent adrift. I know the prospect of gain is deeply rooted amongst the most of us, but greed in all matters of a business character should at all times be deplored.

Yours, &c.,

ARTICLED IN 1858.

P.S.—Since writing the above, a case has come to my knowledge, where the Principal is dead, and the Widow is carrying on the Practice. She is not registered, and is meeting with every success. The husband's name is still retained on the Register, of course. Can this be explained?

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) - - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skiros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 684. LONDON, JULY 15, 1896. VOL. XXXIX.

ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 551.)

PARASITIC AFFECTIONS OF THE MOUTH.

Animal parasites have been observed in the mouth; cases of echinococcus, cysticercus, trichina spiralis, and dracunculus (guinea-worm) have been recorded, but they are so rare that it is only necessary to refer to them in passing.

The vegetable parasites are infinitely more common and important. It is well known that every mouth, whether healthy or diseased, contains an enormous number of bacteria and that the fur on the tongue is composed almost entirely of minute vegetable organisms. It is also admitted that most of the inflammatory affections of the mouth already described are to a very great extent due to the action of micro-organisms.

But there are certain other conditions in which the growth of a vegetable parasite constitutes in itself the chief morbid feature apart from any effect it produces on the tissues of the mouth. These conditions will now be described.

THRUSH.

Thrush occurs most commonly in children who are brought up by hand, but it is sometimes met with in adults who are

prostrated by serious diseases such as typhoid fever, pneumonia, &c.

In children the disease is ushered in with general malaise which lasts a few hours or days ; the mucous membrane of the mouth becomes redder than usual, and in a short time small white patches appear on the lips, cheeks, and tongue, and, sometimes, on the gums. They are circular and at first discrete, looking like pieces of curd, but as they increase in size they coalesce, forming a continuous layer extending sometimes over the whole tongue, lips, cheeks, palate and tonsils. The disease may extend to the pharynx and œsophagus, but does not involve the larynx or trachea. At first the patches adhere closely to the mucous membrane, and can only be detached with difficulty, leaving uncovered deep red areas which bleed readily. After a day or two they become drier, of a yellower colour and more readily detachable. Finally they assume a brownish tint and fall off spontaneously.

During the formation and extension of the patches the child feels ill ; it refuses the bottle or the breast ; the bowels are usually relaxed, the stools being green and offensive. The arms and buttocks become red and excoriated and patches resembling those in the mouth may form ; they are due not to direct spread of the disease through the whole alimentary canal, but to inoculation of the sore places with spores contained in the fæces.

The course which the disease runs, and the severity of its effects upon the patient depend upon the conditions by which the child is surrounded. In private practice the disease is comparatively trivial, whereas in foundling hospitals (especially in former times when the importance of cleanliness was under-estimated) the [disease has been attended with a high mortality, the children becoming exhausted by enteritis and continual diarrhœa.

A microscopic examination of the white patches shows them

to be composed almost entirely of a fungus known as the *saccharomyces albicans* or *thrush fungus*. This organism was formerly known as *oidium albicans*, but recent experiments have shown that it is a bud-fungus, not a mould-fungus. The thrush-fungus consists of cells of various shapes, some being elongated and cylindrical, others oval or spherical, these latter being more abundant on the surface of the membrane; in the deeper parts of the membrane and in the epithelium the cells elongate into thick mycelial threads. The fungus attacks chiefly stratified epithelium; it very seldom attacks mucous membranes covered with cylindrical epithelium.

The fungus may gain access to the mouth in several ways. It may be inspired, it may be directly inoculated from the vagina during parturition, or it may be taken in with the food, especially with milk which has undergone partial fermentation. The disease very rarely occurs in children brought up at the breast with ordinary cleanliness.

The *treatment* of thrush is simple and effectual when the child is surrounded by proper hygienic conditions, but under other circumstances is difficult and unsatisfactory. All vessels and implements used for containing milk, or for feeding the child must be thoroughly cleansed as soon as they have been used. The milk must be quite fresh and should be sterilized before use. If possible the child should be put to the breast of a healthy nurse. The patches of membrane should be detached with a soft rag dipped in weak Condyl's fluid. Borax may be used, but without the addition of syrup, as the latter aids the development of the fungus. In severe cases a weak solution of nitrate of silver (2 grains to the ounce of distilled water) may be used to paint the patches twice a day, borax being frequently used in the intervals.

NIGRITIES OR BLACK TONGUE.

In this condition a black patch forms on the dorsum of the tongue and slowly spreads. After lasting some time (a few

weeks or months) it may disappear spontaneously. It is due to the growth of a parasite (*Glossophyton*) probably closely allied as *Aspergillus nigricans*.

The affection does not give rise to any symptoms beyond a feeling of dryness in the mouth. It is usually discovered accidentally.

It should be treated by suitable antiparasitic remedies.

PHARYNGOMYKOSIS BENIGNA.

This condition consists in the development of soft white spots or tubercles on the base of the tongue near the epiglottis, sometimes on the tonsils and pillars of the fauces. The spots consist of masses of *leptothrix buccalis* and other organisms.

They disappear spontaneously. No special treatment is necessary.

STOMATOMYKOSIS SARCINÆ.

This condition occurs in wasting diseases such as phthisis or protracted typhoid. It consists in the development of hoar-frost-like membranes on the tongue and soft palate, consisting of *sarcinæ*. It is very rare, and does not call for special attention.

DISEASES OF THE TONGUE.

In this section no attempt will be made to give a complete account of the diseases of the tongue. Only those conditions which are of interest and importance to the dental surgeon will be considered.

ULCERS OF THE TONGUE.

The tongue is subject to ulceration from many causes, some local, some constitutional. The frequency of ulceration of the tongue is to a great extent due to the soft structure of its mucous covering and to the many sources of irritation to which it is exposed. The various ulcers of the tongue are best classified according to their cause.

Simple Ulcers. Under this heading are usually included those ulcers which cannot be ascribed to any definite or clearly ascertainable cause ; they are probably due to slight injury or irritation which has passed unnoticed. The best example of this class is seen in cases of chronic superficial glossitis where the surface of the tongue is divested of papillæ and covered by a thin bluish-white pellicle broken up into small areas by lines and fissures. In such cases ulcers are common on the centre of the tongue, being due to sloughing of a small piece of the mucous membrane in the course of an acute attack of inflammation in the seat of old chronic inflammation or scar tissue. The ulcer thus produced soon assumes a chronic character having a smooth, red, glazed surface, callous edges and an irregular or stellate outline. It often causes much pain especially on taking hot food, and is a source of great inconvenience.

The treatment of these ulcers is difficult and unsatisfactory ; they may be got to heal, but they have no sooner healed than they break out again either in the same place or in another part of the tongue. All sources of irritation must be avoided ; the food should be plain, soft and unirritating ; alcohol and tobacco must be given up. Various local remedies may be tried in succession until the most suitable is discovered. Chromic acid solution (ten grains to the ounce) chlorate of potash gargle, honey and borax, and solution of tannic acid, or alum may be tried in turn. Nitrate of silver is often used, but it is seldom serviceable, indeed often harmful, especially when used in strong solutions.

Dyspeptic Ulcers usually occur on the tip of the tongue, but may extend some distance back towards the centre. In some cases the tip and adjacent portion of the dorsum are red and raw, the condition being one of excoriation rather than actual ulceration ; the filiform papillæ are absent, the fungiform papillæ looking larger than natural. Behind the ex-

coriated area the tongue is thickly furred. In other cases definite ulcers result from the breaking of vesicles or pustules situated about the tip of the tongue. When they break they leave small, circular, well-defined ulcers with sharp-cut edges, varying in size from a pin's head to a split pea; their surface may be clean and red, or covered with a thin slough. They are very tender, and, as they are almost constantly in contact with the teeth, they occasion a good deal of pain and inconvenience. The treatment is in most cases limited to the administration of an aperient; they usually heal in a few days. If they are more obstinate or show a tendency to recur, the diet must be regulated, the bowels kept open, and the ulcers painted with chromic acid solution, or rinsed with chlorate of potash gargle.

Aphthous ulcers occur particularly in children between the ages of six months and three years, often as a sequela of measles or scarlet fever. (See Aphthous Stomatitis).

Traumatic ulcers may follow a wound produced by the teeth or by any other cause, they usually heal readily and require no special treatment beyond cleanliness. The most important ulcer of this class is the *dental ulcer*. It is due to the continued rubbing and irritation of a rough or carious tooth, or of a badly-fitting denture. It is always seen on the tip or edge of the tongue, never on the dorsum; it may vary much in character being sometimes a mere crack or excoriation, at others a definite ulcer perhaps an inch in length. In the more acute cases the surface of the ulcer is covered with a shreddy slough, the edges are sharply cut and irregular as if eaten out, and the surrounding area is swollen, sodden, and thickly furred. There is much pain, especially when the tongue is moved, the saliva is increased and the breath offensive. In more chronic cases there is not so much swelling around the ulcer, the edges are not so sharply cut, the surface is free from slough, and the subjective symptoms are

much less intense, but the tissue upon which the ulcer rests is apt to become indurated, often to a considerable extent.

The *diagnosis* of the acute form of dental ulcer is not as a rule difficult. The rapid formation of the ulcer, the sloughy nature of its surface, the sodden condition of the surrounding parts, and the situation of the ulcer opposite a ragged tooth suffice to distinguish it from other ulcers. The diagnosis of the chronic form is much more difficult; it may be confounded with a primary syphilitic chancre, a gummatous, tubercular, or cancerous ulcer. The recognition of the primary syphilitic sore is fairly easy when it is suspected, but its extreme rarity renders it liable to be overlooked. A gummatous ulcer may usually be distinguished by its larger size, greater induration, deeper and fouler surface, and by the presence of other gummata and associated signs of past or present syphilis on the tongue or elsewhere. A tubercular ulcer may be distinguished by its greater depth, absence of induration and the presence of tubercles in the surrounding parts of the tongue, and of tubercular lesions of the lungs or larynx. The most difficult and important point in diagnosis is to distinguish between a chronic dental ulcer and the early stage of cancer of the tongue, and the difficulty is increased by the fact that a chronic dental ulcer may become cancerous, so that there is a period of transition in which a decided diagnosis is impossible. There are, however, certain points, a consideration of which will materially assist the diagnosis. They are the age and sex of the patient, the presence or absence of induration, and the microscopic characters of a scraping from the surface of the ulcer. Cancer of the tongue is extremely rare under thirty, therefore in a person below that age the question of diagnosis between chronic dental ulcer and cancer, can be easily settled. Unfortunately it is in older persons that the difficulty in diagnosis arises, and here age does not help.

Cancer of the tongue is much more common in men than in women, but this fact is not of much assistance in deciding upon an individual case. The absence of induration may be considered to negative the diagnosis of cancer, but its presence may be due to either condition. If a scraping from a cancerous ulcer be examined under the microscope, a large number of epithelial cells will be seen; they differ from those observed in health or from the surface of a simple ulcer; they vary greatly in size and shape, some are flattened scales, others rounded, oval, elongated with tapering ends, or flask-shaped; there are usually three or more large nuclei containing nucleoli as large as the nuclei of normal epithelium; sometimes typical cell-nests are discovered.

To sum up, it may be considered a safe, practical rule to regard every chronic, indurated ulcer of the tongue in a person over 40 years of age as cancerous or likely to become so unless efficiently treated.

The treatment consists in removing the source of irritation; rough teeth should be smoothed down, carious ones filled or extracted, and artificial dentures "relieved" or laid aside for a time. If the ulcer is unhealthy and sloughy, and the tongue much furred, a brisk purge should be given, and the mouth frequently rinsed with chlorate of potash gargle. In chronic cases, if the ulcer does not quickly heal after removal of the source of irritation or if there be any suspicion that it is becoming malignant, it should be excised, and with it an area of a quarter of an inch of healthy tissue.

Mercurial Ulcers. Ulcers may form on the tongue during the course of mercurial stomatitis. They are usually shallow and irregular in shape, and surrounded by a red areola. They are the result of sloughing of the mucous membrane, and usually portions of slough are seen covering the ulcers partly or completely.

Syphilitic and *Tubercular* ulcers of the tongue have already been described (see pp. 545 and 549).

Cancerous Ulcers will be described under the next section.

(*To be continued.*)

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(*Continued from page 558.*)

MOUNTING SWIVELS ON A GOLD PLATE.

These should be adjusted to the case after all the pins are soldered on and the tube teeth fitted. Their position is usually between the second bicuspid and molar on each side.

By this arrangement the springs when attached very fairly balances the set, and an upward pressure is exerted, without any tendency to displace the cases from the alveolar ridges, or thrust them from the mouth, as the author has seen on many occasions when the swivels have been wrongly placed. The following methods will serve to illustrate how they are attached to the plate.

A piece of No. 9 plate $\frac{1}{4}$ of an inch wide is taken and bent at such an angle that one portion of it shall fit the plate whilst the other shall be upright, and have the proper inclination for the swivel to work on (see Fig. 29). This the

standard is fixed to the plate by means of a clamp (see Fig. 30,) whilst the teeth are in position, the teeth are then removed and the standard soldered to the plate. A little whitening may be smeared over the pins in the vicinity, as a

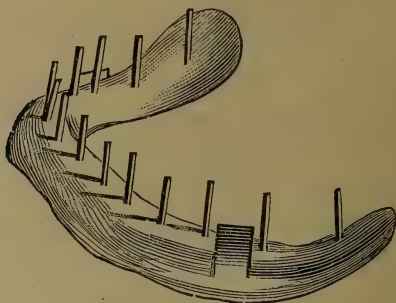


Fig. 29.

precaution, to prevent them being melted during the operation. A hole should now be drilled in the standard for the bolt of the swivel to pass through, and be so placed that the spring when screwed on the shank or bolt of the swivel should have the necessary curve.

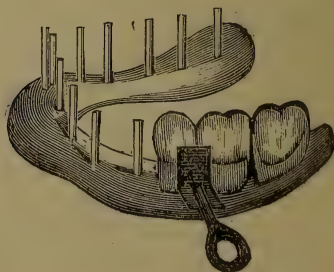


Fig. 30.

Having reduced the swivel bolt to a length suitable for rivetting, and chamfered the hole in the standard on its palatal aspect, it is placed in position and rivetted until it is held firm. Before soldering, some whitening must be intro-

duced between the head of swivel and the standard, also between the eye and bolt of the swivel, in order to prevent the solder from running through and soldering them fast. This should be done thoroughly by working the swivel to and fro until the whitening appears through.

The shank of the swivel should, if possible, rest on the plate, and together with the outside of standards be coated with whitening to prevent them being "sweated" (melted) during soldering. When the swivels are mounted, they should give the springs an inclination parallel to the teeth, and not projecting outwards towards the cheeks.

Another method, and perhaps a more general one is to first make the standard and solder the swivel to it, taking of course the usual precautions. Then the standard with the swivel attached (Fig. 31) is filed up so as to conform to the surface of the plate, and fastened to it with hard wax. A little investment of brickdust and plaster is placed around the shaft of the swivel, and just resting against the standard, but not so as to prevent it being properly soldered. It may now be gradually heated up over a Bunsen, and the standard soldered to the plate.

When fixing swivels to the standard by rivetting, the precaution must be taken that the hole drilled must fit the wire tightly.

Great care must be observed in the arrangement of swivels; in the first place, they must be so adjusted that the springs do not come into contact either with the cheeks or gum. Secondly the springs should have a good bow when the mouth is closed, and thirdly, they should be worn as long as possible.

It is a very good plan to put on a pair of common springs for a week or two, in order to let the patient get experienced in their use, and then put on the gold ones. Patients

should be instructed to bend them always in one direction, in order to avoid crippling them.

The advantages of springs in certain cases are manifold, in the first place they hold up the case firmly, secondly they allow of a much narrower case being worn, and give a feeling of security to the patient in keeping the lower case steady in its place. The objections urged against them are that they entrap the food, tire the jaws, and are apt to break at inconvenient times, and such is often the case. They, however, have their place as dental appliances, and in a considerable number of cases, cannot very well be dispensed with.

As a general thing, these appliances are best obtained from the Dental Depots, but there may be times when one finds it useful to be able to make, at any rate, the swivels oneself, and the student should not consider his education complete, unless he can turn out a creditable set of swivels. One cannot, of course, expect the finish on the home-made article to equal that prepared by a proper machine, but still they can be made in a workmanlike manner, and answer every purpose.



Fig. 31.



Fig. 32.



Fig. 33.



Fig. 34.

For the manufacture of swivels we must provide ourselves with some gold wire, 16 carat, of the same guage as that on which the springs are turned, also some No. 10, 16 carat plate. The following diagrams will serve to illustrate the manufacture.

Fig. 32 represents a half inch length of gold wire.

Fig. 33 represents a piece of No. 10 gold plate $\frac{1}{4}$ of an inch square, with a hole drilled through the centre, to which the wire (Fig. 32) is soldered.

Fig. 34 represents Fig. 33 filed up to form the head of the

swivel, and it is now called the bolt. A small pin vice is the most suitable tool to hold these pieces while filing.

Fig. 35 is a piece of No. 10 gold plate $\frac{1}{4}$ of an inch square, on to one side of which a piece of wire to represent the shaft of the swivel is soldered, while the plate, after being drilled to admit the bolt (Fig. 34) represents the eye of the swivel. To get this into shape it should first be filed square, then the points taken off and made eight-sided, and finally reducing the angles and cementing it into a round such as is represented by Fig. 36.

Fig. 37 Represents the bolt fitted into the eye and the swivel finished up.



Fig. 35.



Fig. 35 (Side view.)



Fig. 36.



Fig. 37.

The general directions for making a set of swivels may be summed up as follows :

Cut four pieces of wire half an inch long, and slightly flatten one end. Now cut a piece of No. 10 plate a quarter of an inch wide and one inch long. A groove should be made in the soldering block, or a piece of coke, to allow the slip of plate to rest in, now mark on the plate the places where the pieces of wire have to be soldered, and make four corresponding grooves in the soldering block to rest the wires in. All the soldering can be done at one operation. We can now divide the slip of metal into portions corresponding to Fig. 35.

We now take another strip of metal one-eighth of an inch wide, and one inch long, and drill at equal distances four holes in it. These holes are broached out to the proper size, and four half inch lengths of wire are soldered into them. The plate is now divided into four, and each bolt is filed up separately.

British Journal of Dental Science.

LONDON, JULY 15, 1896.

THE GENERAL MEDICAL COUNCIL.

The Medical Parliament has met and has got through a fair amount of dental legislation. Much of the work it has done in the past for our specialty calls for our grateful appreciation. But as gratitude is defined as a lively sense of favours to come, we hope it may do much more in the future. It has certainly showed a desire all through to help us to be worthy of our best selves, and under its powerful protection we have done much to stamp out disgraceful practices which still, alas, find congenial soil, and flourish to a large extent. But Rome was not built in a day, and we cannot hope as a profession to be without some unworthy members yet awhile. The Council although powerful is certainly not omnipotent.

On June 6th, the case of Clement Henry Sanders was again before the Council. Mr. Sanders had been summoned upon a former occasion to answer the charge of covering a person named Müller, who is unqualified, and who was left in charge of Mr. Sanders's practice at Exeter, while his employer was away attending to his other practices at Okehampton and at Aldershot. Mr. Sanders had promised to employ a registered assistant at Exeter without delay, and the Council was desirous of hearing whether he had fulfilled his undertaking. Certainly his promise to engage a registered assistant at once, was unfulfilled, as over two months elapsed before a qualified man was engaged, during which time, according to the affidavit of the errand boy, the time devoted to the Exeter practice by Mr. Sanders was very small, the concern being managed by Müller and an apprentice. There was no desire on the part of the prosecution to unduly press the charge; but as their mouthpiece, Mr. R.

W. Turner said, they wished to bring home to the minds of dentists in general that the General Medical Council meant what it said, and to warn them that its resolutions were not to be treated as a dead letter. The Council, as was only to be expected, found the charge proved, but adjourned the further consideration of the matter to allow Mr. Sanders to appear in person—which he had not yet done—and to see if in the meanwhile he conducted himself in a professional manner.

The case of Mr. Merritt also came before the Council. He asked to be placed on the Dentists' Register upon the grounds that he was a Registered Dentist of the Colony of Victoria and also D.D.S. Philadelphia, in addition to which he urged that he obtained the latter diploma in 1866, and had practised in the Colonies for some years prior to the passing of the Dentists' Act. The legal adviser to the Council recommended Mr. Merritt's application to be refused, firstly, on the grounds that the certificate of the Philadelphia Dental College was not and had not been recognized as entitling the possessor to practise in this country; secondly, that Mr. Merritt, although registered in one of our Colonies, had never passed our Colonial examinations, and his registration merely was not sufficient evidence of skill and knowledge; thirdly, that the possession of the D.D.S. Philadelphia did not entitle him to be entered upon our Register in the list of Dentists of the United Kingdom practising in the Colonies; and fourthly, that the fact of his being on the Register of Victoria does not entitle him to be placed on our Register as a Dentist of the United Kingdom practising in the Colonies. We have no doubt Mr. Merritt is an able and honourable Dentist, but nevertheless we think the Council acted very wisely for the sake of the precedent, if for nothing else.

The third case, that of Mr. Stromier, is interesting from the fact that a large portion of his dental education was received at the University of Michigan, the diploma of which no longer entitles the possessor to practise in this Kingdom. Mr. Stromier passed a recognized Preliminary Examination,

and before presenting himself for the Glasgow L.D.S., presented evidence of having attended classes and practice at Michigan University. This curriculum, supplemented by six months study at Glasgow, was accepted by the Faculty of Physicians and Surgeons of Glasgow, as fulfilling their requirements, and their decision was confirmed by the General Medical Council. It seems on the face of it absurd, that a curriculum should be deemed satisfactory, while the degree which is the outcome and guarantee of the curriculum should not be accepted. There is, however, this difference. In America the teachers who prepare the students, also grant them their degrees. With us it is not so.

It will be seen from this short *resumé* that the Council has not been idle in matters which concern us. We only wish that the Dental Committee had a Dentist upon it. It seems to us absurd and anomalous that it has not. The presence of such a gentleman would be of great assistance to his *confrères*, and by choosing a candidate who was not only a dentist but also a medical man, all affairs whether medical or dental, would have his sympathy and interest. There would be no difficulty in finding such a man, and we should be very glad if one of the three vacancies at present were thus filled. It would satisfy a legitimate aspiration in the hearts of each of us, and it would be in accordance also with the generally admitted axiom "No taxation without representation."

CURIOSITIES OF THE TOOTH BRUSH.—Dr. Parmele writes in the *Dental Practitioner*:—In some of the old books published during 1600, directions are given for preparing certain "roots that are used to clean the teeth." Lucerne and liquorice roots are specified. "They are to be boiled and cut in pieces of six inches long. Each end of the root is then to be split with a penknife into the form of a little brush, and they are dried slowly to prevent splitting." "They are used as follows: One end is moistened with water, dipped into tooth-powder and rubbed against the teeth until they look white." Brushes similar to these are

at present used in some parts of Turkey. Less particular Turks, however, use ordinary European tooth-brushes, but as even the most lax among them look upon the pig, and all belonging to him, as vile and unclean, they would as soon think of defiling their mouths with a Russian bristle-brush as of eating a pork chop or a rasher of bacon. The shop-keepers, therefore, swear by their heads and the souls of their fathers and mothers that the hair of which his brushes are made grew on the back of a camel, the cow, or the horse.

DENTISTS AND THE LAY PRESS.—We are glad to see that considerable prominence has been given of late years by the general Press to meetings of the British Dental Association and its Branches in various parts of the country. The public is taking a lively, and on the whole an intelligent interest in our efforts for the advancement of our profession and for the good of our fellow men. We are therefore all the more sorry to see a paragraph in a local paper recording the visit of a gentleman to the town where he formerly practised and where the Branch Meeting was being held. After commenting upon the popularity of their late fellow townsman, the article proceeds to state that since leaving the town “he passed a difficult examination in dentistry at the famous University of Pennsylvania.” The gentleman referred to may be quite innocent of the pressman’s puff, but as an M.R.C.S., L.D.S. Eng., and also as an office bearer of the Branch, we think it an unfortunate circumstance. The pages of this Journal are quite open to any explanation he may choose to give.

DEATH FROM DRINKING CHLOROFORM.—An inquest was held in the Meath Hospital last week on the body of a woman aged thirty. It appeared from the evidence that deceased had taken half an ounce of chloroform to relieve neuralgia. She seems to have had no difficulty in obtaining the drug,

which was supplied from the chemist without any precautions. Both the coroner and the jury expressed an opinion that the sale of chloroform promiscuously, without a doctor's order, is dangerous, and ought to be discouraged. And there, we suppose, the matter will remain.

THE DENTAL DEPARTMENT OF SHEFFIELD ROYAL HOSPITAL.—The dental department of the Sheffield Royal Hospital is now complete, and is opened for the treatment of patients. The rooms set apart for this department form a portion of the new out-patient buildings of the Royal Hospital, which was opened by the Duke and Duchess of York in May of last year. The accommodation consists of a conservation room with four chairs, an extracting and anæsthetic room each containing one dental chair, and a small retiring room. Two rooms are also reserved in the basement, which may ultimately be utilized for prosthetic work. The Dental Manufacturing Company have supplied the chairs, engines and the necessary dental instruments; the cabinets and special furniture being by Mr. Woof, of Sheffield; the scheme of furnishing is the same as for the medical and surgical rooms, and the whole department presents a very modern, well-appointed and business-like appearance. The dental staff consists of six members, one of which will attend each day in the week. Their qualified assistants are allowed to act in case of unavoidable absence. The staff is as follows :—Charles Stokes, L.D.S.I., chairman; R. C. H. Drabble, L.D.S.I.; J. Lee-Pike, L.D.S. Eng.; W. B. Tolputt, L.D.S. Glas., hon. sec.; Frank Harrison, M.R.C.S.Eng., L.D.S. Edin.; Frank Mordaunt, L.D.S.Eng.

AN ELECTRIC HÆMOSTAT.—Mr. Lawson Tait, has just added to his list of valuable contributions to surgery. His latest invention is an electric hæmostat, an instrument in which a current of electricity is utilized for the arrest of

bleeding. The fact of the coagulation of albuminous tissues at 180 Fahrenheit has made this instrument possible, and it takes the form of a platinum wire enclosed in a pair of forceps, the wire being isolated in burned pipe-clay. When an artery is seized by these forceps, and the current turned on, further bleeding is prevented by the agglutination of the walls of the artery, which effectually prevents a further flow of blood. This invention has succeeded in a great number of cases.

BOARD OF GUARDIANS AND THE DENTIST.—We are glad to see that a dentist has been appointed by the Board of Guardians to attend to the teeth of the paupers at Beverley. We are sure that Mr. J. G. Wallis, who has accepted the post, will do his duty in a conscientious manner, but at the same time we cannot refrain from expressing our opinion that the honorarium of £5 per annum is a miserably inadequate one if Mr. Wallis is to devote a fair proportion of his time to his duties at the Workhouse, and does not relegate the said duties to a subordinate. However, we are very glad to see this very thin end of the wedge.

THE ART OF CONVERSATION.—It is said that the Viennese dentists have met in solemn conclave and have decided to form a Society having for its object the instruction of its members in the art of pleasing conversation. They feel that their calling is becoming in danger of being too serious and scientific, and that therefore a leaven of lighter stuff is wanted to be turned on, so to speak, on the shortest notice. Can the Ethiopian change his skin? or can the man of few words galvanize himself into spasmodic loquacity, only to relapse into his former taciturnity to the bewilderment of his patient? Let us be cheerful, let us be sympathetic, but above all, let us be natural, and not assume a characteristic if we possess it not. We have known highly successful men of few words, and we have known equally successful dentists whose conversation was interesting and amusing, but we may

depend upon it the touch of both was skilful as well as gentle, and both could inspire that feeling of sympathy and confidence between patient and operator which is so necessary for the satisfactory discharge of operations which are at no time too pleasant.

AN INTERESTING PROSECUTION.—The prosecution of a person practising as a dentist at Eastbourne, the details of which will be found on another page, and unlawfully using a description and title implying that he was registered and was specially qualified to practise, raises an important point. The defendant does not call himself a dentist or dental surgeon, but describes himself as “D.D.S. Specialist,” under the heading of “American Artificial Teeth Company.” This it is alleged by the British Dental Association, which undertook the prosecution, is contrary to both the Act and the Amending Act of 1886. The Bench seemed to think so too, as the verdict resulted in a conviction, though consent to state a case for a superior court was given. We shall be interested to see if an attempt is made to appeal to a higher tribunal.

A SYMPATHETIC PARAGRAPH.—Commenting upon the above prosecution the *Eastbourne Gazette* has a leaderette in which our profession is spoken of in very kindly terms. Mr. Macoun, the counsel for the defence, spoke disparagingly of the dental profession, and said it was only raised to the dignity of a profession in 1878. The *Gazette* says, “That is no doubt the case. But it is admittedly a most useful profession; and it is asserted to be the direct means of prolonging the span of human existence. The doctors and the advocates of sanitation are not entitled to all the credit for the lowered death-rate. The dentist may fairly claim his share. As a rule the members of the profession are very unobtrusive. Perhaps they are too backward in making known their capacity for usefulness.”

The writer goes on to say "On the principle that prevention is better than cure, I think it would be a very sensible thing if every primary school appointed a dentist, for it is a deplorable thing that a large section of the population should be neglected in this particular." We heartily endorse what the *Gazette* says, and owe it our thanks for its sympathy with our craft and its aims.

Manipulative Miscellany,

It is requested that all new instruments or articles which it is wished to have described under this heading, be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

VERTICAL BEAVER CROWNS.

We have had an opportunity of inspecting a very complete set of Gold Crowns introduced by Mr. Francis Lepper, of Great Marlborough Street. The sides of these seamless crowns are vertical, so that when the proper size has been selected to fit the circumference of the root, the height may be reduced as much as is necessary without the fit being spoiled. Mr. Lepper also supplies a set of gauges consisting of metal rings each numbered to represent one of the crowns. The idea has much to recommend it. It is claimed that the crowns under notice are the only machine-made crowns that can be actually used in every possible case. They are made with 20-carat gold.

Abstracts of British & Foreign Journals.

WHAT IS A PROFESSION ?

By W. H. WAITE, L.D.S.I., D.D.S. Phil.

What are the distinctive characteristics of a profession? Wherein does it differ from a trade? A very simple suggestion may help us. In a trade transaction the public seek an article; in professional matters the public seek an individual. In trade the public can examine the article, estimate its value, and decide for or against it beforehand, whereas in a profession the public must confide in the individual, having only for its guidance the reputation and experience of the individual. In trade the individual is of small consequence, provided the article is genuine; but in a profession the individual is of the first importance—his knowledge, his skill, his character count for everything. In trade, finally, the public can be equally well served at any respectable establishment—the demand and the supply are for the most part uniform. In the professions there is infinite variety; identity is well nigh impossible, either in the matter requiring attention or in the individuals whose services are sought. The enumeration of these points is not arbitrary or artificial. There is no obscure or secondary purpose. We are striving after an answer to the query: What is a profession? All manner of unfair and grotesque inferences have been drawn from the facts just recited; but we have nothing to do with any conclusions save those which may elucidate the exact position of the professional man. Why is he called professional? Because he professes to understand, and he professes to be able to perform the duties pertaining to his speciality. He has no goods to exhibit for inspection or competition when he enters the arena, but he has to show that he possesses the knowledge, the skill and the character he professes. He must be taken very largely on trust, but when once he has demonstrated his capability his position is as well assured as anything mortal can be.

Assuming this definition to be just, let us proceed to inquire how far the practice of dental surgery comes within the limits laid down? Already we have admitted three essentials, viz., knowledge, skill, character. Our first postu-

late, therefore, is that dental practice demands an amount of knowledge not less important than that required in any other profession ; intimate knowledge and general knowledge. Intimate knowledge of all the tissues found in the oral cavity and its associate parts ; much of this is microscopical, and only to be obtained by considerable labour. Intimate knowledge of the process of development, together with the irregularities probable or possible. Intimate knowledge of normal and abnormal conditions, morbid and pathological changes, to which these parts are liable. Intimate knowledge of the manifold methods of treatment, including a thorough acquaintance with the chemistry of the oral fluids, and the medicaments and materials employed. Intimate knowledge of the subject of anæsthesia and the mode of administering various anæsthetics. Intimate knowledge of the multifarious instruments, appliances, &c., by help of which operative dentistry has risen to the rank of a fine art. And last, yet certainly not least, intimate knowledge of mechanics, particularly the mechanical action of the facial muscles, and the judicious construction of artificial substitutes. This intimate knowledge is indispensable to intelligent and successful practice ; without it a man may practise, but he cannot hold place among professional men. Again, general knowledge is required ; structural and functional anatomy, physiology, digestion, circulation, nutrition. General knowledge of those obscure nervous disorders which often involve dental suffering but for which the dental organs are not wholly responsible ; general knowledge of malignant and other growths liable to occur about the head and neck, and all and sundry diseases with which the dental organs may become complicated ; general knowledge of chemistry, materia medica, metallurgy, &c., in short, the scope of general knowledge cannot be defined. It will be observed we are confining our attention to professional knowledge. Intellectual culture need not be insisted on here ; it goes without saying, the more a man has of it the better for him in any case. Now the question arises—what guarantee can the public obtain as to the knowledge of a dental practitioner ? Much every way. By the provisions of the Dentists Act, no man can call himself dentist, dental surgeon, or the like, unless he is registered under the Act ; also, no man can now be registered until he has passed through a curriculum embracing all the subjects we have recited, and stood the test of a thorough examination by one of the licensing bodies.

CARBOLIC ACID.

In *The Polyclinic* Dr. Oscar H. Allis, of Philadelphia, has contributed an article worthy of widespread circulation. He says the use of carbolic acid in full strength upon the fresh tissues, raw surfaces, etc., causes the formation of a protective albuminate, a condition which renders further absorption impossible.

The same takes place when the strong acid is applied to a raw burned surface. It is not calimed that an aqueous dilution is safe when applied extensively to raw surfaces; on the contrary, the more dilute the more dangerous. In a case of washing out the thorax in the treatment of purulent pleurisy, the late Roger Keys, a most careful and judicious physician, came near losing a patient from absorption of the dilute acid.

"It will strike many of you with astonishment when I say that it would be safer to pour a gallon of pure carbolic acid into a purulent thoracic cavity than to pour in a gallon of water into which a single ounce of carbolic acid has been placed. I will go even further, and say that excess of the strong acid in a cavity such as an abscess cavity, or upon exposed tissues, as a burn or a fresh wound, does no harm, while excess of a dilute solution, if left in a cavity or used over an extensive raw surface, will be promptly followed by dangerous, if not fatal, toxic effects."

NEW METHOD OF ADMINISTERING CHLOROFORM.

M. Rosenberg contends that the dangers to both heart and respiration are occasioned reflexly by the irritating action of the chloroform on the terminations of the trigeminus distributed to the mucous membrane of the nose, that the same is true of any other anæsthetic taken through the nose, and that this may be obviated by first anesthetizing the mucous membrane of the nose by using cocaine, which is an antidote to chloroform. Having tried this method in fifty cases, he concludes: 1. The commencement of anesthesia is less disagreeable for the patient, who never makes defensive movements. 2. The excitement stage is often wanting, and is always slight, except in cases of alcoholics. 3. During anesthesia it is very rarely a patient vomits, and if vomiting does occur, there is

little retching. 4. Upon awakening the patient experiences no disagreeable sensation, and is not haunted by the smell of chloroform or ether. The method pursued is as follows: The patient is directed to blow his nose in order to clear the mucous membrane, then leaning forward or sitting (never lying), to snuff a centigram of powder consisting of 10 per cent. of cocaine hydrochlorate and some inert substance. Repeat in about three minutes and commence general anesthesia. If the operation is prolonged, repeat chloroform continuously, drop by drop.

Gazette des Hopitaux.

POST-CARD DOTS.

“Whose teeth do you recommend?” Nature’s.

“I am a victim of insomnia and nervous depression, and after every day’s work at the chair, I am obliged to lie down for an hour before I can get up an appetite to eat my dinner, etc.” Give up dentistry, and go to Manitoba farming.

“What are the qualifications for practice in Bermuda, the Bahamas, and Barbadoes, and Cuba?” No legal qualifications required. There are six dentists in Bermuda, two in the Bahamas, and five in the Barbadoes, and five hundred in Cuba.

“Are there any dentists in England, since the death of Sir John Tomes, possessing titles of knighthood?” Sir Edwin Saunders, dentist to Her Majesty the Queen, is the only one. Montreal enjoys the distinction of having a practising dentist who claims to be the legal heir to the throne of France.

“What is the origin of the word ‘cadaver’?” An abbot, about 1216, conceived himself an etymologist, and as a specimen of his powers left us the word “cadaver,” a corpse, thus dissected: “Ca,” quoth he, is abbreviated for caro; “da,” for data; “ver,” for vermibus. Hence we have “caro data vermibus,” flesh given to the worms. Yet this hardly applies to the cadaver to-day in the dissecting room.

Dominion Dental Journal.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, May 4, 1896. Mr. David Hepburn, L.D.S. Eng., President, in the chair.

The Minutes of the previous meeting were read and confirmed.

The following gentlemen were elected as Auditors for the ensuing year :—Mr. Northcroft and Mr. Bateman.

The following gentleman was proposed as a resident member of the Society :—Robert Stephen Fairbank, M.R.C.S. Eng., L.S.A. Lond., 18, George Street, Hanover Square, W.

The following gentlemen having signed the necessary obligation forms were admitted members of the Society :—Thomas Ruberry Chambers, 29, New Inn Hall Street, Oxford ; George Henry Bowden, Roseneath, Reigate.

The Librarian reported that he had received the ordinary exchanges, and the usual Journals and Transactions.

CASUAL COMMUNICATIONS.

Mr. George Brunton read the following note on “Some Experiments in Colouring Porcelain for Teeth and Gum Bodies or Enamels” :—

The porcelain which I have used for experiments is a low fusing one, the melting point is 1045° C. ; this temperature was determined by means of the Le Chatelier pyrometer. The analysis of the porcelain is as follows :—

| | | | | | |
|-------------------|-----|-----|-----|-------|-----------|
| Silica | ... | ... | ... | 65·44 | per cent. |
| Alumina | ... | ... | ... | 4·57 | ” |
| Magnesia | ... | ... | ... | 2·26 | ” |
| Lime | ... | ... | ... | 13·52 | ” |
| Soda | ... | ... | ... | 9·96 | ” |
| Potash | ... | ... | ... | 0·66 | ” |
| Sulphuric Acid | ... | ... | ... | 0·53 | ” |
| Loss on ignition | ... | ... | ... | 1·66 | ” |
| Protoxide of iron | ... | ... | ... | 0·23 | ” |
| | | | | 98·83 | ” |

Compare this with the analyses of the three porcelains, viz. : (1) Chinese ; (2) Berlin ; (3) English :—

| | I. | II. | III. |
|-------------------|--------|--------|-------|
| Silica | 71.04 | 72.96 | 39.88 |
| Alumina | 22.46 | 24.78 | 21.48 |
| Lime | 3.82 | 1.04 | 10.06 |
| Bone earth | | | 26.44 |
| Alkalies | 2.68 | 1.22 | 2.14 |

And with glass :

| | Window | Crown. | Sheet. |
|-------------------|--------|--------|--------|
| Silica | 69.0 | 67.7 | 56.0 |
| Lime | 12.5 | 9.9 | |
| Alumina | 7.4 | 1.4 | 1.0 |
| Soda | 11.1 | | |
| Potash | | 21.0 | 8.6 |
| Lead Oxide | | | 34.4 |

You will notice that the porcelain I have used is more like glass, and would be more correctly called an enamel. You know that "many varieties of glass, especially those containing relatively large quantities of silicate of lime and alumina, when heated for some time in the furnace become opaque, and are converted into a substance resembling porcelain."

I mention these facts to show clearly the material with which we are dealing. The ready way in which porcelain is coloured by the metallic chlorides led me to make some experiments with the combination of metals, the result of which is before you. Being dissatisfied with the imitation of gum in the low fusing body, I tried what I could produce in making a variety of shades. The gold chloride was a 2 per cent. solution, most of the others were 10 per cent. The metals which produce very little colour in the porcelain when used alone, seem to answer best the purpose of producing the delicate gradations of shade in pink gum. A rough and

ready method was used in making those experiments. The porcelain powder was laid on a glass slab, and the liquid chloride mixed with it instead of water, and then at once put into a platina muffled and fired. The row of examples on the left of the cord are produced by a single metallic chloride, that on the right by mixing the gold chloride with the chloride of the metal mentioned after each example in the first row. I have tried to produce a more natural gum by mixing a high fusing gum body with the low fusing plain uncoloured body, and have obtained the desired shade with metallic chlorides: the result, however, is that it raises the fusing point, and that is a drawback in using this mixture on a low fusing body. The high fusing gum which I have got the best results from (after trying many) is a gum enamel prepared by S. L. Close for Dr. J. Allen's Body, using equal parts of the high and low fusing bodies. This work, as you see, is only in the experimental stage. I hope some one who has had more experience will try this method, and give us the result of his efforts.

Mr. REINHARDT asked Mr. Brunton if he had tried mixing perchloride of tin and chloride of gold, and if that had had any effect whatever upon the shade of the gum colour. He thought also that some of the colours were altogether too dark, and for the guidance of his friends and others who might want to experiment in the matter, he would like it to be made clear what was the strength of the colouring solutions Mr. Brunton used.

Mr. G. BRUNTON said the gold chloride was a 2 per cent. solution and most of the others were 10 per cent. solutions. If the colours were seen by daylight it would be noticed that a mixture of tin with gold produced a slightly purple pink. If silver was mixed with gold, care should be taken to put only a very small quantity of silver, otherwise a strong yellow tinge would be obtained, and the same thing applied to zinc, cadmium, and the other metals which were used for white porcelain.

Mr. BRUNTON also showed a simple method of applying rubber dam by stretching it on a thin wire frame. The rubber was sewn on to a piece of calico, by which it was kept off the patient's face, somewhat like Fernald's rubber holder. It had only three fastenings and, beside being very light, the cloth was turned up so as to catch any gold which might drop during filling operations.

Mr. OSWALD FERGUS presented a framed photograph of

"Long Calderwood," famous as the birthplace of William Hunter and John Hunter. He asked the Society to accept the picture because John Hunter's first published work was his article on the "Natural History of the Human Teeth," and when it was remembered that John Hunter had not the modern microscope to carry out his researches, they would feel a sense of wonder that he was able to do so much in the direction that he did.

The PRESIDENT said they were all extremely indebted to Mr. Fergus for his kindness.

Mr. J. F. COLYER then read a paper on "The Early Treatment of Crowded Mouths," which was published in our last issue.

DISCUSSION.

Mr. R. H. WOODHOUSE said he was particularly unsuited to criticise the chief feature of the paper, because he had never himself adopted the treatment that Mr. Colyer spoke of. The case that Mr. Colyer had brought forward he (Mr. Woodhouse) would be very unwilling to subject to any form of treatment for prospective irregularity. The longer he practised the more unwilling he was to interfere with mouths at a very early stage. He found that nature had such an immense power in correcting irregularities that appeared early, that he was willing to give her every chance. With the one exception of the lower teeth not biting inside the upper ones, he would not attempt to regulate any of the mouths that Mr. Colyer had thrown on the screen. With regard to the others, he (Mr. Woodhouse) did not think it was advisable to treat a crowded mouth directly such a condition seemed apparent, because he felt that it was impossible at such an early stage to say what the future of the mouth would be. It could not be really foreseen what teeth might become decayed in the course of three or four years; it must be at the best only conjecture. He thought that a great help had been afforded by the introduction of carborundum discs. Mouths that he would formerly have been very anxious about now could be treated with much greater prospect of success by free divisions between the molars for incipient caries. He adopted that treatment with much greater heroism than he ever did before, because it could be done with much less suffering to the patient. By nursing a mouth up to say, the age of 14, they would be able to see what the future of the

mouth was likely to be. He knew many cases in which he would have been tempted to sacrifice teeth, but the teeth had improved so much under treatment that he had left the mouth alone, and left the patient with unimpaired dentition. If they waited until 13 or 14, until all the teeth were fully erupted and in their places, they could then decide with much greater confidence what teeth it was best to sacrifice. With regard to the second question, he thought that if any treatment had to be adopted, extraction was generally the best. It was speedy, it saved the patient an immense deal of trouble and it enabled them to meet a large number of cases that could not be met in any other way. They were all confronted with the difficulty of boys and girls attending school. If those boys and girls could come to them regularly they might be able to carry out the expansion treatment, but in a large number of cases that was quite impossible, and he was more and more inclined to adopt extraction as a remedy for crowded mouths. As to the third question, he had never yet adopted that treatment. He thought it was beginning too early for one thing, and although it might be done in hospital practice he would be shy of doing it in private practice. It seemed to him a little cruel to take out a bicuspid and inflict a bad wound. He took it that the bicuspid would have to be taken out on both sides, so that it was needlessly putting patients to a severe operation. He thought the temporary teeth were very important to save for masticating purposes. A great deal of constitutional trouble in the transition period between losing the first teeth and gaining the second, was due to the want of masticating strength by removing the temporary molars in the way suggested. The author had alluded to a plate for keeping back the second molars and pressing the back surfaces of the central incisors. He (Mr. Woodhouse) thought a good plan in adopting that plate was also to make pressure on the laterals, which were often placed far back, and if the upper teeth were kept back the lower teeth were at the same time kept from coming forward, because, if the articulation was perfect, as it should be, before such treatment was adopted, the molars would be prevented from tilting to any great extent. With regard to the fourth question in cases where the first permanent molars were unsavable, what was the best plan of treatment?—unhesitatingly he should say, take them out. If a mouth of 14 years of age needed thinning, he would probably take out the six-year molars; but in many cases he had deferred taking out the

teeth to even later date. He thought they had to thank the new discs for saving many hundreds of molar teeth that must have gone when decay developed in that fatal place between the two molars. He felt that it was best to defer operations for irregularity till as late as possible ; from 14 to 15 was quite early enough to take out teeth for the ordinary forms of irregularity. There might be exceptions, such as a hopelessly crowded mouth or a canine or lateral out of place, but as a broad principle he would never operate so early for the relief of crowding. Where early removal of the molars took place they would find the twelve-year-old molar canted over, so that when the wisdom teeth came, decay was very liable to develop between them and the molars. Therefore he thought it was most important that all the teeth should be firmly set in position before any operation was made for remedying irregularity.

Mr. H. BALDWIN said the work Mr. Colyer had brought forward was just the sort of work which was required to settle certain of the questions which were still *sub judice* in the mind of the profession. The profession had not really made up its mind as to whether it was better to extract unerupted bicuspidis or not, and it had not made up its mind, in cases where six-year molars had to be extracted, whether it was better to extract them before the eruption of the twelve-year-old molars or after. He had been looking at Mr. Colyer's models, and he thought the results of the treatment in most cases were satisfactory. In those cases where Mr. Colyer thought he had got too much room, he (Mr. Baldwin) was inclined to think it was otherwise. The patients were still at a very early age, and in time those spaces would entirely close up. With regard to the second question, it depended very largely on the condition of the lower arch. If the case were one of general crowding of upper and lower it would certainly seem better to extract, and so put the teeth straight, but if the lower teeth seemed to be fairly regular and the upper teeth crowded, and at the same time the upper jaw distinctly contracted, showing the outer cusps of the upper bicuspidis and molars internal to, or edge to edge with, the corresponding cusps of the lower teeth, that would seem to him a typical base for expansion of the upper jaw. Question No. 3 was one on which they would be glad to hear individual opinion. With regard to Question 5, personally he thought it was better to wait until the second molars were erupted, because then they got the full benefit of the extraction, got the full amount of room, and he did not think they

got that same amount of tilting of the second lower molars that they otherwise would get. If the six-year molars were extracted very early a good deal of the space was frequently lost by the coming forward of the second molars. As to whether it were better to extract a savable six-year molar or a bicuspid, it seemed to him that there were nearly a dozen reasons why the bicuspid should be chosen instead of the molar.

Mr. GEORGE BRUNTON said that his own experience coincided rather with that of Mr. Woodhouse, but Mr. Colyer's method, it must be remembered, was comparatively a new one. He thought that most of the expansion plates capped the molars, but although he had made a good many expansion plates he only remembered having capped the molars once. He could generally manage to expand without doing so, thereby saving the teeth from premature decay.

Mr. SIDNEY SPOKES said he should be content to say "No" to Mr. Colyer's first question. With regard to the second, speaking generally, he should say he was in favour of extraction as against expansion. The third question contained the crux of Mr. Colyer's communication. He would suggest to Mr. Colyer that in some of his cases if he wanted more room and felt obliged to do something, he might extract the temporary molars and leave the first bicuspid alone. In some of his cases it appeared that the extraction of the temporary molar alone would have given him quite sufficient room. The extraction of both the temporary molars would be another way out of the difficulty. The larger size of the temporary molars compared with their successors, had not been referred to by Mr. Colyer, although no doubt the matter had occurred to him. In nearly every one of Mr. Colyer's cases there was an approach to a V-shaped arch. Was this the result of his treatment? In the case of the permanent canines he should leave them to become a case of outstanding canines, and deal with them at the usual period and in the usual way, taking into consideration the question of whether the first permanent molar had to be lost or the first bicuspid. He generally removed the first bicuspid if there were no other consideration than obtaining room for a canine. One of the strongest arguments that Mr. Colyer had brought forward for his treatment was with regard to the crowded condition of the teeth producing caries. They knew that that was one of the predisposing causes of caries, but at the same time he thought it was

rather unusual, unless in a very severe case of neglect or of overcrowding, where the incisors were overlapping one another to a large extent, to find any great amount of caries amongst the incisors before the age of 12, when the second permanent molar was coming up. He thought the two permanent molars should be left to come in contact before the first permanent molars were removed, if they wanted to keep the space. Mr. Colyer had said that the case might be treated as soon as the second permanent molars appeared through the gum, but he (Mr. Spokes) would be disposed to wait a little longer and let the cusps interlock thoroughly. They would not then travel forward so quickly.

Mr. GEORGE CUNNINGHAM said he would like to tell the author of the paper that in the future it would not suffice to simply place before a scientific dental society the photographs of one aspect of the case. It was all very well to show the alteration in an upper arch, but that was only one view; the fundamental question of function—the nature of the articulation with the lower arch—had not been brought before them. He thought that was an important point which should not be lost sight of. He quite sympathised with the coming idea about the benefits derivable from the extraction of the unerupted bicuspid, though he had never yet had an opportunity of performing the operation. The author remarked in the paper that on a certain occasion, for certain purposes, he extracted the upper lateral incisors. In all his (Mr. Cunningham's) experience of cases of treatment of irregularity, he had never yet had to extract an upper lateral incisor, and he could not really understand how the author ever countenanced marring one of the main objects he evidently had in view, because he regarded the æsthetic function of that tooth as being extremely important. With regard to the author's first question, he would first ask him "Was it wise to employ the term a 'crowded mouth'?" As to the choice of treatment in the majority of cases, extraction or expansion, he supposed that by expansion the author meant a large regulating plate that covered the teeth. He thought there was a great deal in the newer methods, where by means of bands and caps with attached springs or levers they could get rid of some of the objectionable features of the older methods. There was no doubt that the plate, especially when it was uncared for, led to disastrous results. He knew of one very serious case, where by using the ordinary expansion plate with piano wire and vulcanite plate, he certainly produced

innumerable points of caries about the teeth which he very much regretted. With regard to question three, it was evident that they must have some method of treatment, and any treatment which did not tend to keep the principle of the major factor of mastication in view, and the importance of the first permanent molar, was not worthy of consideration; therefore he rather endorsed what the author had said in his paper. As to question four, that was a question which nobody had settled. He had had a case which most men would have said, and he himself would have said so at one time, was one where the molars were unsavable; but he had treated and capped with gold crowns those four molars instead of extracting them, and although it would be ten years before he would be able to tell definitely what the result of his operation was, yet in the meantime the case had been going on well and it was still full of hope. With regard to the author's fifth question, he (Mr. Cunningham) started with the idea of extraction when the second molars were coming up or just about to erupt: then he passed on to the other opinion that it was better to wait until the second molars were in thorough occlusion, which was the accepted practice; then came the split model stage of his career when he tried to look at the case not from the front or the outside but from the point of view from within. Notwithstanding the many authorities who had never repented taking out six-year molars, he had repented several, and was convinced that he might have done much better. In many cases they could not prevent a certain amount of tilting of the lower molar or the partial rotation of the upper molar. He was obliged to confess that the best cases he had seen where there was proper occlusion of second molars, had been where the first permanent molars had been extracted at the age of 9 and 10.

Mr. ROBBINS said he was surprised that Mr. Cunningham, with his vast experience, had never seen a case in which he was justified in removing a lateral tooth. He could show him some models in which he thought he had been more than justified in that form of treatment, and in which he thought it was the only thing that could be done for the patient. They were all cases in which the mouth had been somewhat neglected. In one case the lateral had permanently locked inside the lower bite before he saw it, and the compression had been very great. The removal of the lateral gave a very good result indeed; the central and the canine came together without any apparatus, and by just tipping off

the canine teeth he did not think a casual observer would notice it much in the mouth. With reference to the heroic treatment of Mr. Colyer's method, they always admired Mr. Colyer's heroism. A little while ago he (Mr. Robbins) performed the same operation, and in that one particular mouth he thought the result was fairly good. But on the whole he would like to strike the midway distance between Mr. Colyer and Mr. Woodhouse, and agreed with Mr. Woodhouse entirely as to the necessity of waiting until most of the teeth were well through. He should make the age 13 rather than 15 provided, as Mr. Woodhouse said, there were no instand-ing laterals to work upon. He gave parents three good reasons why they should not be in a hurry; first, it was generally a great inconvenience; secondly, it was a great expense to the parents; and thirdly, there was no doubt about it that a plate, if worn for any length of time, even though kept clean, did more or less injury to the permanent teeth.

Mr. HUMBY asked Mr. Colyer on what grounds he supposed that the apex of the root of a tooth was the centre of the circle from which the crown moved. He had come to a different conclusion. He thought, as Mr. Cunningham had mentioned, that in all the cases Mr. Colyer had shown one factor had been left out of consideration. He thought they limited their observation too much to the look of the model, that was to say, they saw the result that the surrounding conditions had on the dentition, but did not take into consideration the conditions themselves. He thought there were many surrounding conditions which modified considerably the eruption of the teeth, and it would be well if they were to consider what those conditions were. One condition which he found had never been touched upon in any of the works on the articulation of teeth, was the effect of a thick, muscular, contractile lip upon a crowded dentition. There was another thing which would bring about the condition, viz., tonsillitis. He thought those two conditions were only the beginning of a long list that might be made up in connection with things they should consider with regard to crowded mouths. The size even of the tongue should be considered, because they were taught that the tongue formed the inner boundary and the lips the outer boundary. If that was the case they had to consider that an abnormally small tongue or abnormally thick lips would materially influence the question. There was another matter that he was very pleased to see one gentleman seemed to have met with in his practice, cases in relation to

the tilting of the second permanent molar in consequence of the extraction of the first permanent molar. He himself had seen a considerable number of cases, and the cases where he had the most tilting had been with the late extractions. In late extraction the wisdom tooth had a greater forward pressure upon the second molar, and by extraction of the first they were taking away the forward support of the second molar after it was fully erupted. There was, in fact, nothing left whatever in support of the second permanent molar except the alveolus which bordered on the mesial aspect. He thought when the first permanent molar was taken away at an early age there was a greater quantity of tissue in advance of the second molar, and the leverage exerted from the advancement of the wisdom tooth was considerably less.

Mr. DENISON PEDLEY said there was one point which had not been dealt with by the previous speakers, and that was with regard to the treatment that Mr. Colyer proposed of removing the first bicuspid with the temporary molar. It seemed to him that if any use was forthcoming for this operation it could be found in those extremely difficult cases of superior protrusion. In the last two days he had had two cases in which he had simply to reserve his opinion so far as the operation for extracting the first bicuspid and the temporary molar was concerned. He did not know whether it occurred to Mr. Colyer that occasionally the second bicuspid was absent. In cases of protrusion he might ask Mr. Colyer whether it was not advisable, in addition to removing the first bicuspid with a temporary molar, to raise the bite somewhat. His experience with protrusion was that in the majority of such cases the lower incisors pointed right inside, either on the necks of the centrals and laterals, or else the upper centrals were quite outside the bite.

Mr. STORER BENNETT said that if he had known Mr. Colyer intended showing lantern slides, he would have brought down two slides which he thought would have been instructive. They were slides of a very valuable specimen contained in the museum, and to which he would direct the attention of the members. It was a skull from which the outer alveolar plate had been removed on both sides. At some considerably anterior period to the time the owner died, the second temporary molar had been removed on one side of the mouth but not on the other. They were, therefore, able to see what had been the result of the premature extraction of the second temporary molar on one side, and what had been the result

of leaving it on the other. On the side where the second temporary molar had been extracted the first permanent molar had travelled forward, its roots had pressed on the unerupted bicuspid, and had driven them forwards, and they, in their turn, had driven forward the canine, so that the canine on that side of the mouth was over the situation of the lateral and pressing on its root. Had the second temporary molar been retained for its due time, the first temporary molar could not have so travelled forward. He would like to draw attention to a point he had never seen noted in the text books. If anyone would examine a skull of the age of 5 or 6 years, a skull from which the outer alveolar plate was removed, so as to display the roots of the second milk molars, it would be seen that they diverged to such an extent that the posterior roots extended further back than the posterior surface of their crowns. Therefore they must have a very large influence in keeping back the six-year-old molars. With regard to the removal of six-year-old molars, he cordially agreed with Mr. Woodhouse for two reasons, firstly, for the reason he had just given, and secondly because he thought one was too apt to forget that by taking out the six-year-old molars before the twelve-year-old molars were in position, all the biting came on the front teeth. He felt sure that was a very important factor in producing superior protrusion. That was a point Mr. Colyer had not touched on, and therefore was not now under discussion. With regard to the author's last question, he thought most distinctly they ought never to take out the six-year old molars for the purpose of regulation until the twelve-year-old molars were so far erupted that they were in contact when the mouth was shut. He thought by leaving them until that time the bite was kept up and superior protrusion was far less apt to occur.

Mr. STOREY said that until they had the Röntgen rays to help them in the matter they would be unable to settle the question, which necessarily in its treatment dealt with separate and individual cases. He had in his mind the cases of two sisters. One of them was brought to him with her mouth crowded when she was about 11 years old. He postponed on several occasions the anxiety of the parents to have the case dealt with, and when she was about 13 he treated the case by the extraction of the second bicuspid, and that treatment was exceedingly successful. The parents thought that what was good for one was good for another, and they kept the other sister from him until she was about 15 or 16 years old, and

just now he had been obliged in consequence to take out the lateral incisors. With regard to the general course of treatment he had for a long time past been taking out the six-year molars when necessary at, roughly speaking, the age of 12, just before the occlusion of the twelve-year-old molars, and he had found in that way that he had got pretty good results with regard to regulation. He had also found that split models were of great help in the treatment of such cases by giving a more perfect idea of the articulation.

Mr. J. F. COLYER, in reply, said that as far as the form of treatment went, he was perfectly open minded on the question. He had used the treatment wherever he thought it advisable, simply and purely with the object of learning. He failed to see, unless that was done, how they were ever going to learn at all. With regard to irregularities of the teeth, they were he thought, quite in the infancy of knowing anything about the subject; for instance, they had an insufficient knowledge of, what he might term the anatomy of irregularities, and he thought it was a subject which certainly someone should endeavour to elucidate. In the majority of crowded mouths the trouble was invariably due to the pressure of the canine and the whole gist of the treatment seemed to be to find room for the canine. One speaker referred to the question of taking out a first temporary molar to obtain that room. If they would look at a skull they would find that by taking out the first temporary molar they did not give the permanent canine any room at all. The only way to make room for the permanent canine was by taking out the first bicuspid, and the permanent canine would then be able to move back and so relieve the pressure on and the irregularity of the lateral, a result which he did not think could be obtained if they waited until all the teeth were in position. Mr. Woodhouse said he would not treat a crowded mouth at an early stage. He (Mr. Colyer) would, for the older the patient becomes the more fixed become irregularities of the teeth and the less chance there is of getting them right. With regard to the free division between the molars, he held rather an opposite view. He endeavoured to avoid anything like a space between the molars, and every day found the necessity of trying to contour; directly they began to leave space between the teeth they were simply inviting decay, and were likely to get periodontal mischief. With regard to the wound caused by the operation, that was not so bad as might be thought. If the patient were given an antiseptic mouthwash there would

be very little after-pain. He disagreed with Mr. Woodhouse with regard to what he said about the value of the first temporary molar as the centre of mastication. He (Mr. Colyer) regarded the first permanent molar as the centre of mastication; it was in the very part of the jaw where the muscles played with the greatest power. As a matter of fact, he thought the first temporary molar, and in adults the first bicuspid had really very little to do with mastication. With regard to Mr. Baldwin, it seemed to him that the whole question of whether they should expand an arch or not depended simply on the direction of the teeth. If the cusps of the teeth were sloping slightly inwards it was a case for expansion; if outwards he did not think expansion should be attempted. With regard to the six year old molar treatment the only way to settle the question was by obtaining more information with regard to it. In answer to Mr. Spokes he would say, with regard to the temporary molar, that if Mr. Spokes would examine the skull he had mentioned he would come round to his (Mr. Colyer's) way of thinking. With regard to the V-shaped tendency, he thought it would be found that that tendency was marked also in the original models. He did not think there was any V-shaped tendency acquired in the operation. Where there was a V-shaped appearance afterwards they would find that tendency originally in the patient. He found when canines were erupted external to the arch they were by no means easy to bring into place. With regard to Mr. Cunningham, he really had not had sufficient time to get the cases ready, and should certainly like to have shown the lower models with the uppers. He knew Mr. Cunningham was very sweet on the question of the function in mastication, but the aim and object of regulation was not to produce a perfect bite. Directly they attempted to do that they left out the question of the tendency of the teeth to decay, and he thought that was the principal thing they had to fight against. He would ask Mr. Cunningham how he was going to treat a case of a canine erupted over the lateral, with the lateral internal to the bite?

Mr. Colyer said another sweeping statement had been made by Mr. Cunningham about the first permanent molars. There were many cases that came to them where it was absolutely necessary to take out a decayed molar, for instance, where first permanent molars were decayed below the gum, and causing chronic periodontitis. With regard to Mr. Humby he would say he had never yet seen a tooth moved by mechan-

ical means where the tooth moved bodily. The tooth seemed to swing on its apex. With regard to lip action on the teeth he thought that was well known, but he did not think that tonsillitis had anything whatever to do with causing irregularities. It was argued that by tonsillitis and by the mouth breathing that it gave rise to, the mouth was kept open and the buccinator muscle pressed on the bicuspid. Against that argument they had to consider the following facts; the buccinator muscle lay along the surface of the molar teeth, and the saddle-shaped arch was not in all cases symmetrical. If they put their finger into a child's mouth they would not find any more pressure in the region of the bicuspid than in the region of the molar teeth. If the saddle-shaped arch were due to the pressure of the buccinator one would expect to find more pressure certainly on placing the finger in the mouth. The majority of saddle-shaped arches could be accounted for by crowding. In reply to Mr. Storer Bennett, he would say that to take out a second temporary molar at an early age in a child's mouth was a fatal form of treatment, but he did not think the extraction of a first temporary molar had the same effect, he failed to find the second temporary molar moving forward. That was what he expected to find but he had failed to do so. With regard to Mr. Storey, he quite agreed with him in thinking that the X rays might be brought into use.

A vote of thanks having been accorded to those who had brought forward casual communications and contributed to the discussion, the meeting was adjourned.

Dental News.

PASS LIST.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

At the last Examination the following gentlemen having passed the necessary examinations were admitted Licentiates in Dental Surgery—

Ashby, Edgar, Guy's Hospital.

Barnard, Walter Burrows, L.R.C.P.Lond., Charing Cross Hospital and the Dental Hospital of London.

Bascombe, Ernest Dare, Guy's Hospital.

- Beyer, Ernest Fritz Bertram, Owens College and Royal Infirmary, and Victoria Dental Hospital, Manchester.
- Bidlake, Luther, Guy's Hospital.
- Bloomfield, Edgar Athelstan, Charing Cross Hospital and the Dental Hospital of London.
- Briant, Wallace Watson, Guy's Hospital.
- Byrne, Thomas Wafer, University College, Royal Infirmary and Dental Hospital, Liverpool.
- Carter Stuart, Mason College, Queen's and General Hospitals, and Dental Hospital, Birmingham.
- Coltman, Ernest, Guy's Hospital.
- Conder, Harold, Charing Cross Hospital, and Dental Hospital of London.
- Connor, George Washington, M.R.C.S. Eng., Middlesex Hospital and Dental Hospital of London.
- Cowles, Hector Charles, Guy's Hospital.
- Crappier, Harold Sugden, Guy's Hospital.
- Crosby, Alfred Edward Binnington, Guy's Hospital.
- Day, Kendrew James, Charing Cross Hospital and Dental Hospital of London.
- De Mierra, Albert, Guy's Hospital.
- Dunlop, Harry, Charing Cross Hospital and Dental Hospital of London.
- Dupigny, Joseph Elford, Guy's Hospital.
- Edey, George Russell, Guy's Hospital.
- Fisher, Sydney Bailey, Mason College, Queen's and General Hospitals, and Dental Hospital, Birmingham.
- Harris, Harold Octavious Whitfield, Guy's Hospital.
- Heeson, Edwin Ernest Darley, Guy's Hospital.
- Hemsted, Frederick, Charing Cross Hospital, and Dental Hospital of London.
- Hill, William Edmund, Middlesex and National Dental Hospital.
- Hinchliff, Charles John, Guy's Hospital.
- Howe, Albert Frederick Alonzo, Guy's Hospital.
- Knaggs, Sydney Angelo, Charing Cross Hospital and Dental Hospital of London.
- Lacey, William John Mark, Guy's Hospital.
- Mardon, Frederick William, Charing Cross Hospital and the Dental Hospital of London.
- Moore, Hubert William, Glasgow University, Middlesex and National Dental Hospitals.
- Mordaunt, Osbert, Charing Cross Hospital and Dental Hospital of London.
- Mudie, Walter, Charing Cross Hospital and Dental Hospital of London.
- Mullord, Charles, London and National Dental Hospitals.
- Newberry, Ernest Arthur, Charing Cross Hospital and Dental Hospital of London.
- Nixon, Arthur Percival, University College, Royal Infirmary, and Dental Hospital, Liverpool.
- Oliver, Norman Henry, Guy's Hospital.
- Orridge, Alfred Edward Horton, Charing Cross Hospital and Dental Hospital of London.
- Padgett, Frank Joseph, Charing Cross Hospital and Dental Hospital of London.
- Plumley, Arthur George Grant, Guy's Hospital.
- Read, Arthur, Guy's Hospital.
- Riches, Charles John Hurrey, Middlesex and National Dental Hospitals.
- Robey, Arthur Malcolm, Mason College, Queen's and General Hospitals, and Dental Hospital, Birmingham.

Sexton, Walter, Middlesex Hospital and Dental Hospital of London.

Skae, John Walker, University College, Royal Infirmary and Dental Hospital, Liverpool.

Snell, Norris, Guy's Hospital.

Staton, Harry Hamilton, Charing Cross Hospital, and Dental Hospital of London.

Stevens, Richard Henry, Guy's Hospital.

Ta'Bois, Leopold, Guy's Hospital.

Tasker, Benjamin George, Guy's Hospital.

Tebbitt, Ernest Reginald, Guy's Hospital.

Sixteen candidates were referred back to their professional studies.

PROSECUTION UNDER THE DENTISTS' ACT.

At the Eastbourne Police Court on the 22nd ult., before the Mayor and other magistrates, Jacques Flax appeared in answer to a summons alleging that he not being registered under the Dentists' Act of 1878 and not being then a legally qualified medical practitioner did unlawfully take or use an addition, title or description, namely D.D.S., or some other name, title, addition or description implying that he was registered under the said act or that he was specially qualified to practise dentistry.

Mr. R. W. Turner (instructed by Messrs. F. Bowman and Crawley Boevey, of 21, Bedford row, W.C., appeared to prosecute on behalf of the British Dental Association; and Mr. Ritchie Macoun (instructed by Mr. T. E. Varley Kirtlan) defended.

Mr. Turner, in opening the case, said defendant, who had been carrying on business at 1, Victoria-place in this town, was an unregistered practitioner. Outside his premises there was a notice board of which this was a copy: "American Artificial Teeth Company, J. Flax, D.D.S." meaning Doctor of Dental Surgery. To the witness who would be called he said, "I am a Doctor of Dental Surgery, as you will see by my diploma." If defendant could have been registered in respect of his New Hampshire diploma he would have been. They must therefore take it that that diploma was in fact not recognised. None of these American diplomas were recognised. In his consulting room defendant had the following notice: "Mr. Flax begs to inform his patients that being duly qualified in America and also registered in France, he is not registered under the Dentist's Act of 1878." He (Mr. Turner) did not know whether his friend was going to rely on that as his defence, but in the first place there was no such notice outside the premises. You did not get this notice until you were in the consulting room or the operating room. Defendant said, "I am qualified in America. I am qualified in France. I am not registered in England." Therefore it followed that the virtually said, "I am breaking the law by holding myself out as being a person specially qualified to practise dentistry."

William Fletcher Thomas Brown, examined by Mr. Turner said—I am clerk to Messrs. Bowman and Crawley Boevey, 21 Bedford row, W.C.

In consequence of instructions received, did you go to the premises of defendant at 1, Victoria place, Eastbourne, on June 8?—I did.

Did you make a note of what you saw outside the premises?—I did.

Will you tell us what you saw outside the premises?—There was a board in the seaside road on the house: "American Artificial teeth Company, Specialist, J Flax, D.D.S. Entrance, 1, Victoria place."

And a hand pointing to it?—Yes.

Are there any similar boards there?—I did not notice any that side. On the door-post at the entrance to the premises was there anything?—Similar words.

With "D.D.S."—Yes; and also that show case. It contained teeth then as it does now.

You will take down the words on the case! "American Artificial Teeth Company. J. Flax, Specialist." There is no "D.D.S." there. Well did you go up to the first floor of the premises?—I was shown to the first floor by the gentleman who answered the door. I asked for Mr. Flax, and he took my name in to Mr. Flax.

Did Mr. Flax come to you?—Mr. Flax came in.

What did you say?—I think I said, "Good-morning, Mr. Flax," or "Mr. Flax, I presume?" That is what I said. I said, "I have called from the solicitors of the British Dental Association with reference to the board you have downstairs, particularly the words and letters on them."

Did you mention the letters?—I said, "Particularly the letters D.D.S." I said, "We take these to mean a Doctor of Dental Surgery." I presume that is what you mean by them?" He said, "Yes. I am entitled to use those letters. I have a diploma as doctor of dental surgery. You can see it if you like." He said he did not understand. I told him, "I think in any circumstances the Association will prosecute you for using the letters D.D.S." He said, "I am perfectly competent. I can do any class of work. I do all of it myself." Then he said, "I don't wish to deceive the public or anyone. You see that notice," pointing to the notice on the table which was on the wall then. I turned round and said, "Yes, I do. You appear to be perfectly candid. I will take a note of that"—which I did. He said, "I have nothing whatever to conceal," and asked me to go into the operating room.

Was this the consulting room you had this conversation in?—I was then in the consulting room.

How was it furnished?—A table with books and papers. This notice was on the wall with one or two pictures, I think.

Mr. Turner—You went into the operating room?

Witness—Yes; and Mr. Flax pointed this notice out to me and showed me his case of instruments which he said were the best in Eastbourne or as good as any in Eastbourne.

Was there a chair there? A dental chair. On the wall there was another of these notices which Mr. Flax pointed out to me.

Did you show him a pamphlet?—I showed him in the first instance a pamphlet. This is the pamphlet.

He said there was nothing in it, meaning I suppose that there was nothing objectionable as far as the Act is concerned.

I will put it in in any case. It is suggested that "D.D.S." does not mean "Doctor of Dental Surgery." Did you have any further conversation?—He said he had been a dentist in one of the Parisian hospitals.

Did he say how he acquired his practice?—I asked him how long he had been in Eastbourne. He said, "About six months."

Did he say anything about the practice?—He told me that he purchased it of Mr. Phillips.

Defendant pointed out what he said was a diploma hanging on the wall. He said that was a New Hampshire diploma. I could see it had New Hampshire on it. He said, "You used to recognise American

diplomas," and mentioned Michigan and Harvard. He added, "You don't do it now," or, "It is not done now."

Cross-examined by Mr. Macoun—Mr. Brown, had Mr. Flax any intimation that you were going to visit him?—Not to my knowledge.

He did not prepare his establishment for your reception?—No, sir. I don't know that he knew I was coming.

You just sent in your name, "Mr. Brown wants to see Mr. Flax?"—Yes.

You remained in the consulting room some little time?—Yes.

Was defendant with you the whole time you were in the consulting room?—No. When I first went in I saw a gentleman at the door who took me up to the consulting room.

You misunderstand me. From the time you first saw him in the consulting room to the time you left the consulting room together was he with you the whole time?—Mr. Flax was.

Then he had no time to prepare the operating room for your reception?—No.

He seems to have been wonderfully confiding?—He told me he had nothing to conceal.

Mr. Macoun—This is a prosecution for deception and fraud.

Mr. Turner—I beg my friend's pardon. That is the whole difference between this act and the Medical Act. Here as in the Veterinary Surgeons Act it is simply a question of holding himself out to be something he is not. There is not a word of fraud in it.

Mr. Macoun—To use a title and imply you are something you are not is a deception.

Cross-examination continued—Did he not strike you as an exceedingly candid man?—Yes.

You saw the notices there?—There were the notices on the wall.

You made a note of the letters?—Yes.

I call for that note. Was this made in the street at the time?—Yes.

I suppose you have no difficulty in identifying the show case?—No. That is the one.

Is this all you saw?—I saw a foreign diploma.

I mean in front of the house?—On the windows there was the word "American."

Quite so. That may strike you as insignificant, but it is nevertheless important. In each of the windows was there the word "American" in large white letters?—Yes.

Now you are a man of some little experience in these matters, are you not?—Yes, I have had a few.

You don't pretend of course for a moment that the letters D.D.S. deceived you?—They did not deceive me certainly.

They did not deceive you. Make a note of that please, for something important rests on that. You do not suggest that this man is not qualified to act as a dentist?—He is not specially qualified.

Answer my question, please. You don't suggest that this man is not qualified to act as a dentist?—I don't suggest anything. I don't suggest he is qualified or unqualified. He may be competent.

This is the diploma, is it not, to which he drew your attention?—Yes.

Now, if you have some little experience in these matters, you know there is such a diploma as the diploma of New Hampshire?—I have never been to New Hampshire and don't know there is such a place.

You spoke just now of the diplomas of Michigan and Harvard.—Mr. Flax told me.

Mr. Macoun—You identify the diploma put in?

Mr. Turner—The document put in as a diploma.

Mr. Macoun—You are charging this man with fraud. You do not suggest we have forged this, do you?

No, I don't suggest it.

Mr. Turner—I don't want to suggest fraud for a moment. It is unnecessary under the Act.

Mr. Macoun—I will ask your worships when the proper time comes to take it as necessary.

Mr. Turner—I shall object.

Mr. Macoun—You may also take it from me that my friend will object to every possible thing.

Mr. Turner—No, I shall not.

Mr. Macoun—Is not American dentistry far and away above English dentistry? Has it not been brought to a far higher state of perfection?

Witness—It is hardly for me to say. Fortunately, I have not had to go to a dentist.

This man did not treat you or operate in any way?—No.

Do you know that nearly every dentist's operating room has got American chairs?—They have operating chairs like Mr. Flax had.

Mr. Macoun—An American operating chair?

Mr. Turner—He does not say American operating chairs. He says, "They have operating chairs like Mr. Flax had."

Mr. Macoun—Don't you know that as a fact? I have to get the facts from you as you are probably the only witness. Don't you know nearly every surgeon dentist worthy of the name goes to America to study dental matters?

Witness—I could not answer that.

You know a large number go?—I could not say that.

You know Mr. Flax is a Frenchman, I suppose?—I asked him, and he told me he was a Frenchman.

In fact he does not seem to have kept any of his family history back from you. My friend in opening this case suggested it was an offence to practise as a dentist. Is that your opinion?—The Dental Association think a man must not call himself a dentist unless he is one.

Mr. Macoun—I respectfully agree with the Association. I disagree with my friend's opening.

Mr. Turner—I did not intend to open that. I put in both Registers. That is the Medical Register. The other is the Dental Register.

The Assistant Magistrates' Clerk—Have you any other witnesses?

No. I have no other witnesses.

Mr. Macoun—I understand the [case for the prosecution has closed. Your worships, I don't intend to occupy you at any length because it seems to me that the prosecution has lamentably failed to establish a case. If you look closely to this Act of Parliament you will see that as Acts of Parliament go it is clear. The intention is fairly intelligible. This is clause 3: "From and after the Act of 1879 a person shall not be entitled to take or use the word or title of dentist." There is no proof before this court that this man has taken or used the title of dentist. This is a penal Act must be construed strictly "Either alone or in combination with any separate word or words." We have neither used one nor the other. "Or any name, title, addition, or description implying he is registered under this Act." There is no evidence before the Court that he has used any name, title or description implying he is registered under the Act; and the only matter before the Court at the moment is whether the use of three letters "D.D.S.," on two places on the doorpost, mean and hold out that he is a registered English dentist, a person specially qualified to practise dentistry.

Mr. Turner—The Act says "whether expressed in letters or words."

Mr. Macoun—I agree with my friend. It can include any title,

description, or addition, whether expressed in words or letters, or partly in one way and partly in the other. I ask you to look at this Act as men of common sense. It is an Act passed for the protection of the public—the protection of the public alone. It is not an Act passed for the purpose of protecting registered dentists against unregistered dentists. Till 1878 there was no such thing as a profession of dentistry.

Mr. Turner—You will excuse me.

Mr. Macoun—Up to that time dentistry was a trade. In 1878 this Act is passed, and then for the first time the business is lifted to the platform of a profession. In fact, if my friend does not know it, it has been held that a contract for a set of artificial teeth is a contract for the delivery of “goods, wares, and merchandise.”

Mr. Turner—Not now.

Mr. Macoun—This Act is put off the statute book, and its effect is not to protect the public from people qualified, but to prevent people who are unqualified practising dentistry as registered dentists. It is no offence against the law to practise as a dentist if you are not a dentist. It is an offence against the law to hold yourself out as a qualified British dentist when you are not one. There is nothing to prevent my taking a house in Eastbourne and practising as a dentist. No evil consequences would arise, except perhaps to those unfortunate individuals who might consult me. I dare not describe myself as a registered dentist or dental practitioner. That is the whole point. Has this man held himself out as a British registered practitioner? This is a British matter we are dealing with. It is a British Act of Parliament. The witness told you that he noticed at this man's premises the word “American” on every single window. Now I ask you to look at this case here. The inscription means he is a specialist in American artificial teeth. The evidence of Mr. Brown in regard to “D.D.S.” is that the letters did not deceive him. Now I take my first point. There must be positive evidence (before you convict) of actual deception. The people who have been deceived must be called before you. The invariable practice in cases of this kind is for some one to go in and ask for the dentist, and have a tooth seen to, or more commonly still to go to a doctor and get prescribed for. That has not been done in this case. The witness sees defendant and has a confiding conversation and informs him when the conversation is over that the Dental Association will prosecute him.

Mr. Turner—That was at the time.

Mr. Macoun—It would be convenient if my friend would not interrupt me. I say there must be evidence that the letters “D.D.S.” deceived somebody. There is no evidence of that kind. I put it to the only witness, and he says the letters “D.D.S.” “did not imply to me that he (defendant) was a registered dentist. I knew better.” That is the only evidence before this court. It might deceive the members of the public. I am not going to say whether it would or would not. The evidence is that he was not himself deceived, and, therefore there is no evidence of deception by words implying that he is a registered dentist when he was not a registered dentist. Under these circumstances I feel confident that the information must fail. There are other reasons. Perhaps I had better not go into them. I judge from the amount of warmth put into this case that there must be a great deal of feeling. It is not merely a case of asking the Bench calmly and dispassionately to deal with the construction of the statute. There is a certain amount of feeling existing between registered dentists and unregistered dentists; and I want to emphasize this point, that it is not an offence for an unregistered dentist to practise. There is no evidence that anything has been used implying that this man is a registered dentist. I shall take the point that the man is not ordinarily resident in this country.

The Assistant Magistrate's Clerk—Do you put in any evidence?

Mr. Macoun—I don't think I can.

The Assistant Magistrate's Clerk—I don't think it is a really serious point. You must have evidence of it.

Mr. Turner—It is only in fairness to my friend that I point out this. The "D.D.S." not only implied he was registered—

Mr. Macoun—The case is closed.

Mr. Turner—He implied that he was specially qualified to practise dentistry, not that he was a British dentist.

The Bench retired to consult, and on their return the Mayor said—We have considered this case and find it is clearly made out, in consequence of which we must inflict a fine of £5 and the costs.

Mr. Turner—What costs will be allowed? This is a case in which it was necessary to incur some expense in order to fight the case. I should ask you to allow me some reasonable sum for costs.

The Bench decided to allow taxed costs to be settled between the parties. They also consented to state a case applied for by Mr. Macoun, who intimated that he would appeal against the decision on these grounds:—

1.—It is not an offence to practise as a dentist not being registered, and not using the words "Dentist" or "Dental Practitioner."

2.—There must be evidence that the use of the letters "D.D.S." did as a matter of fact imply to somebody or other, that Mr. Flax was a registered dentist.

Mr. Turner—Having regard to this conviction, I shall not proceed with the other summonses. They only referred to the other titles that were used.

The other summonses referred to the words "American Artificial Teeth Company" and "Specialist."

ROYAL COLLEGE OF SURGEONS.

At the last meeting of the Council, a report from the Committee on the Dental Surgery regulations was received and adopted. (Regulations and synopses will be issued as soon as possible as the alterations will affect all who now register as dental students.) Under the new scheme there will be three examinations—a preliminary science examination and two professional examinations for the licence. The preliminary science examination will consist of chemistry, physics, and practical chemistry. The first professional examination will consist of mechanical dentistry and dental metallurgy, and the second of dental anatomy and physiology, dental pathology and surgery, including operative work, human anatomy, and physiology, and surgery, including pathology.

ERRATUM.

Mr. John William Vaughan points out to us that we omitted his name from the list of gentlemen who passed the First Examination of the Faculty of Physicians and Surgeons of Glasgow. This was unintentional.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of MAY, 1896.

| | |
|---|------|
| Number of Patients attended | 750 |
| Number of Extractions | 375 |
| Number of Extractions under Anæsthetics | 191 |
| Gold Stoppings | 160 |
| Other Stoppings | 149 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 134 |
| Crowns | 12 |
| Irregularities | ... |
| Inlays | ... |
| Total | 1771 |

ERNEST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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SOME POINTS IN CONNECTION WITH THE BACTERIA OF THE MOUTH.*

By J. W. WASHBOURN, M.D., F.R.C.P., and
K. W. GOADBY.

A knowledge of the nature and functions of the bacteria found in the mouth is of the greatest importance both to dental surgeons and to medical men. To the dental surgeon it is of importance on account of the *role* played by bacteria in the production of caries and of various local affections, while to the medical man it is of importance in the study of the etiology of many infective processes, such for instance as diphtheria or scarlet fever.

We have been especially interested in the relation of the streptococci found in the mouth to those occurring in septicæmic conditions in the human subject. We have made a number of observations in this connection, and we venture, with some diffidence, on account of their incomplete nature, to bring our results before you to-night.

In the course of our investigations we have examined the mouths of a large number of healthy and sick individuals, so that we have obtained a fairly extensive practical knowledge of the bacteria of the mouth.

Anyone who has studied this question will be struck with certain facts. In the first place bacteria are found in all mouths, whether the teeth are sound or carious, and whether

* Read before the Odontological Society of Great Britain.

the individual is well or ill. Secondly, when the teeth are carious, there are generally many more bacteria present in the mouth than when the teeth are sound. Thirdly, in acute diseases more bacteria are present than in health. Lastly, a systematic cleansing of the teeth with the tooth-brush greatly diminishes the number of the bacteria present. An example which came under our notice well illustrated this point. We made a series of examinations of the mouth of a boy with sound teeth, on account of the number of spirilla which were constantly present. One day, to our surprise, the spirilla had completely disappeared, and on enquiry it turned out that the boy had taken to the use of a toothbrush, as he was getting tired of the repeated examinations.

Cleansing of the mouth diminishes the number of bacteria, partly mechanically, and partly by removing *débris* of food and dead epithelial cells upon which the bacteria flourish. All the conditions which favour the retention of particles of food, such for instance as a close packing of the teeth, also favour the growth of bacteria.

An overgrowth of bacteria in the mouth is checked by certain natural processes. Firstly, the saliva acts not only by mechanically removing the bacteria, but also in virtue of its bactericidal properties. Sanarelli has shown that fresh saliva destroys some bacteria and hinders the growth of others. In this respect it is similar to the blood serum and to other fluids of the body. Secondly, the cells which are contained in the lymphoid tissue of the tonsils, act as phagocytes englobing and destroying bacteria.

The importance of diminishing the number of bacteria in the mouth is due to the undoubted fact that caries is caused by their agency. It is well known that caries occurs most frequently in those who neglect their teeth. There are no doubt other causes which favour the production of caries, such as an imperfect development of the teeth, a deficient

calcification and so on ; but these are only predisposing causes, and without the agency of bacteria caries does not occur.

The exact manner in which caries is produced appears to be the following :—Bacteria multiply in various parts of the teeth where cracks or irregularities allow of the collection of particles of food. During their growth acid is formed and a decalcification takes place. The organic matrix of the teeth thus becomes exposed, and then serves as food for the bacteria ; and a further formation of acid occurs, which again decalcifies fresh portions of the tooth. The bacteria penetrate into the healthy structure through the dentinal tubes, and produce a lateral destruction of the elastin walls of the tubes and ultimately of the surrounding tissue, so that a large cavity may be formed with only a small external opening. Should the pulp cavity be reached, inflammation occurs and suppuration may ensue.

Caries must not be considered a specific process due to only one kind of bacterium. There are many species of bacteria which will produce caries, just as there are many kinds of bacteria which will produce inflammation and suppuration in various parts of the body.

We should only weary you by attempting to give a list of the species of bacteria that have been found in the mouth one time or another by different observers. Many of these bacteria are only occasional visitors which have been introduced with the food or air. They remain for a short time in the mouth and then disappear, the conditions not being favourable for their development. When we consider the large number of species of bacteria contained in ordinary drinking water, it is no cause for surprise that systematic cultivations made from the mouth reveal the presence of many kinds of bacteria.

But apart from the bacteria that are, so to speak, accident-

ally present, the mouth contains certain species which constitute its normal flora. Some of the constant inhabitants of the mouth appear to be incapable of multiplying outside the body under the ordinary conditions of nature, and indeed some species have resisted all attempts at cultivation in artificial media. Some, on the other hand, can be cultivated in the various media generally employed.

On examining the different regions of the mouth certain species of bacteria are met with most frequently in certain localities. This localisation is most apparent when the teeth are sound and the mouth systematically cleansed.

Scrapings from the mucous membrane of the cheek, especially in the region of the buccal sulcus, invariably show the presence of cocci generally arranged in pairs and often adherent to epithelial cells. In perfectly healthy mouths, these are often the only kind of bacteria seen on a microscopical examination. We shall refer to these cocci hereafter. Sarcinæ are often present in this region in unclean mouths and when the teeth are carious.

The space between the gums and teeth is a favourite spot for the growth of bacteria. Those which are most constantly present cannot be cultivated upon ordinary media. We believe that this is partially due to the fact that they are anærobic, for under anærobic conditions we have obtained pure cultivations. The species to which we refer are *leptothrix innominata*, *bacillus maximus buccalis*, *jodococcus vaginatus*, *spirillum sputigenum*, *spirochæte dentium*.

The *bacillus maximus buccalis* consist of large jointed bacilli, which stain of a purple colour with iodine and lactic acid.

The *spirillum sputigenum* consists of curved rods, which when examined in the hanging drop are motile. Some interest attaches to this bacillus, because it was formerly considered by some observers to be identical with the cholera

vibrio. Its inability to grow on ordinary culture media at once distinguishes it from the latter micro-organism.

The *spirochæte dentium* consists of very fine corkscrew-shaped bodies slightly pointed at the ends, and staining faintly with the aniline dyes. This spirillum looks very much like the flagella seen upon other bacteria. Indeed, we are still uncertain whether some of the spirilla forms met with in the mouth are not really flagella. In some of our specimens the fine spirilla appear to be attached to the spirillum sputigenum. By examining hanging drop preparations we are, however, quite satisfied that most of the fine spirilla forms are really bacteria, for they can be observed to possess independent motility. Similar fine spirilla have also been found in the evacuation of patients suffering from cholera, and in the intestinal contents of pigs. The *spirochæte dentium* was found by Netter in the pus from a case of putrid empyema.

We have isolated a bacillus which agrees in its microscopical appearances with that described by Miller as the *leptothrix bucalis maxima*, and which differs from the *bacillus buccalis maxima* in not staining with iodine and lactic acid.

Various chromogenic bacteria have been found in the mouth. Freund isolated eighteen different species. These bacteria are interesting because they are the cause of various pigments which occur upon healthy and carious teeth and on deposits of tartar.

Pathogenic bacteria in the Mouth.—We now come to the interesting question of the presence of bacteria pathogenic to the human subject in the mouths of healthy individuals.

There is abundant proof that such an occurrence is by no means uncommon. The *diplococcus of pneumonia* has been found in a large number of the cases in which it has been searched for. The best method of isolating it is to inoculate

mice with saliva and to make cultivations from the blood after death. This micro-organism is the cause of acute lobar pneumonia and of some forms of pleurisy, cerebro-spinal meningitis, otitis, and other diseases in the human subject.

The *diphtheria bacillus* has also been found in certain cases. On several occasions one of the authors has found virulent diphtheria bacilli in the mouths of perfectly healthy individuals, or in patients convalescent from scarlet fever and with no symptoms of diphtheria. In one case it was present for several weeks in the mouth of a healthy individual.

Among the pathogenic bacteria that have been found from time to time in the mouths of healthy individuals, we may mention the staphylococcus pyogenes aureus and the streptococcus pyogenes; to the latter we shall presently revert.

The occurrence of pathogenic bacteria in the mouth is of great interest. It throws light upon the spread of disease, and shows how an apparently healthy individual may convey disease to another. This is one of the modes by which diphtheria is disseminated, and it is on this account that we meet with difficulties in attempting to eradicate the disease when it has once gained a foothold in an institution such as a large school. It, moreover, shows how carefully dental instruments should be disinfected after use. We cannot help feeling that sometimes sufficient care is not observed in this direction. It is not sufficient to rinse instruments in an antiseptic solution; they should, if possible, be placed for a few minutes in boiling water, there being no better way of sterilising than this simple procedure.

But apart from these practical considerations, there is the theoretical question how a virulent bacterium can remain in the mouth without producing disease. This is, without doubt, due to the individual being immune. A bacterium only becomes pathogenic when it is virulent in relation to the susceptibility of the individual. The same bacterium may be

harmless to one individual and yet produce disease in another. For the production of disease two factors are necessary—the exciting and the predisposing cause. The former, in infective diseases, is the bacterium, and the latter the susceptibility of the individual. If the individual is not susceptible no disease is produced, and different persons vary in respect to susceptibility.

We will now discuss the question of the presence of *pathogenic streptococci* in the mouth. The evidence is conflicting; some observers state that pathogenic streptococci are frequently present, others say they are seldom present; while a third series of observers maintain that a streptococcus is commonly found in the mouth which is non-pathogenic, and which is a different species to the pathogenic streptococcus.

We have made a number of observations in this direction. On making microscopical examinations of the secretion from various regions of the mouth, we have been struck with the frequent presence of masses of cocci. They are generally to be found on the tonsils and gum margin, and invariably on the mucous membrane of the buccal sulcus. We have found them present in the mouths of eighteen healthy individuals we have examined. These cocci are often found lying upon squamous epithelial cells, as a rule they are arranged in the form of diplococci, but sometimes short chains are to be seen. The individual cocci may be elongated, giving the appearance of short bacilli. Now by making cultivations from the buccal sulcus where these cocci are always present we have invariably obtained cultivations of streptococci, which we have no doubt are the same as those seen in the microscopical preparations. That the cocci are arranged chiefly in pairs in the mouth and in chains in the cultivations is quite consistent with what we know of the morphology of streptococci.

The method we adopt is the following: A little of the scraping of the mucous membrane was removed with a plati-

num wire, and broth tubes were inoculated and incubated at 31° C. for twenty-four hours. At the end of this time the broth examined microscopically showed a growth consisting of diplococci, streptococci, and other bacteria. From the broth, streak cultures were made on agar. Sometimes the resulting growth was a pure cultivation of streptococci, but generally other colonies also appeared ; among these the most frequent were large crenated colonies of sarcinæ, especially in those cases in which a large amount of caries existed. Having obtained a cultivation on agar, pure cultivations could easily be obtained by inoculating a third series of agar tubes.

We have examined 24 mouths in all, 16 with perfectly sound teeth, and 8 with one or more carious teeth, and in every case streptococci were obtained in the cultivations. These observations show quite conclusively that streptococci are invariably present in the mouths of healthy individuals, they also show what care must be taken in coming to conclusions as to the signification of streptococci found in the mouth in disease. Many observers, in making bacteriological examinations of the exudation in diphtheria, lay great stress upon the presence of streptococci, in addition to the diphtheria bacillus in the cultivation tubes, and they state that when many streptococci develop in the cultures the case is more severe than when the diphtheria bacillus only is present. Drs. Goodall, Card, and one of the authors have doubted this from their own observations ; and the fact that streptococci are present in the normal mouth gives an explanation of these divergent results.

An exceedingly important question arises with regard to the relation of the streptococci found in the normal mouth to the streptococcus which is the cause of disease in the human subject. Is the streptococcus of the normal mouth a harmless saprophyte, which is only related to the streptococcus of

disease by certain similarities, just as the hay bacillus resembles the anthrax bacillus? Or are the two micro-organisms varieties of the same species, which are capable under appropriate conditions of being mutually convertible? Can the normal streptococci of the mouth invade the body and produce disease under circumstances which lower the resistance of the body?

We will give a few examples to make these questions quite clear. In scarlet fever streptococci often invade the tissues of the tonsil, and may spread to the other tissues of the body producing septicæmia or pyæmia. The streptococci cultivated from the resulting lesions are quite similar to the streptococci found in other septicæmic conditions, and possess a similar virulence when tested upon animals. It is a very enticing theory that the normal streptococci in the mouth have been enabled to invade the tissue of the body in virtue of the lowering of the resistance caused by the virus of scarlet fever, and that in their passage through the body they have increased in virulence. A similar example may be given in the case of puerperal fever, which is due to the invasion of the body by streptococci. Now in the normal vagina streptococci are frequently present, and it is suggested that the lowering of resistance of the body during parturition has enabled these streptococci to invade the body, that, in fact, a process of auto-infection has occurred. Such a view must be accepted with the greatest caution, on account of the bearing it has upon our views of the etiology and prophylaxis of infective diseases. It certainly does not agree with our knowledge of the etiology of puerperal fever, for this disease is generally conveyed by the introduction of micro-organisms from the outside, by means of infected instruments, or the hands of the operator. The etiology of scarlet fever is also opposed to the same view.

Besides, wounds of the mouth heal very rapidly, and this

we should hardly expect if the ordinary mouth streptococcus were identical with that of disease. On the other hand, operations about the mouth may be followed by a streptococcal pyæmia. A case of this kind was under the care of one of the authors. The extraction of a tooth was followed by signs of acute septicæmia, the patient only recovering after necrosis of the alveolus of the upper jaw. Such cases may be explained on the auto-infection theory just mentioned, but another explanation is possible. Virulent streptococci may have been introduced from the outside by infected instruments, or they may have been accidentally present in the mouth.

We have already alluded to the occasional presence of virulent diphtheria bacilli in the mouth, and there is no doubt that virulent streptococci are also at times present. Several observers have undoubtedly found virulent streptococci in the mouths of healthy individuals, but this does not prove that the streptococci constantly present in the mouth are of this nature.

Our own observations have led us to incline to the view of Lingelsheim, that the normal streptococcus of the mouth is a different species to that which produces disease in the human subject.

The question is an exceedingly difficult one to decide, and an analogous question arises in the case of cholera and diphtheria. Are the vibrios met with in drinking water different species from the cholera vibrio? and are the Xerosis bacillus and Hoffman's bacillus different species to the true diphtheria bacillus.

We will say a few words about the relation of Hoffman's bacillus to the diphtheria bacillus, for we believe the question to be somewhat analogous to that concerning the streptococcus. Hoffman's bacillus is not infrequently found in normal mouths, and has no doubt in many instances been mistaken for the true diphtheria bacillus. It resembles it in

cultivations and to some extent microscopically, especially in old cultivations, when it has become clubbed like the diphtheria bacillus. It is not, however, pathogenic to animals, and can be distinguished from the diphtheria bacillus by the careful comparisons of cultures made under similar conditions. It has never been converted into the true diphtheria bacillus by artificial means and is probably a different species, belonging, however, to the same group. We have already stated that the true pathogenic diphtheria bacillus may be present in the mouths of healthy individuals.

Now to understand the difficulties in distinguishing the normal streptococcus of the mouth from that of disease, we must say something of the varieties of streptococci found in various diseases in the human subject. Streptococci are the cause of erysipelas, pyæmia, puerperal fever, and a variety of other septic affections. The streptococci obtained from different cases of these diseases agree with one another in their main features and have been grouped together by Lingelsheim into one species, called by him the streptococcus longus.

The general characters of this streptococcus are the following : It grows best at 37° C., but will grow at the ordinary temperature of the air. On agar and gelatine the colonies are minute and semi-transparent, the latter medium is not liquefied. The growth in broth is rather characteristic ; flocculent masses stick to the sides and fall to the bottom of the tube, while the rest of the broth remains clear and transparent. A slight amount of acidity is produced in the cultivations. The microscopical appearance of the broth cultivations is characterised by the length of the chains, some consisting of as many as forty members. Hence the name streptococcus longus. In other media the chains are often much shorter, and in the tissues of infected animals only diplococci forms may be met with.

These are the main characters of the streptococcus longus,

but cultural and microscopical differences are to be observed in the micro-organisms obtained from different sources. For example, broth may be rendered uniformly turbid, instead of presenting the characteristic growth above described. Differences in virulence in animals have, however, been looked upon as the most important point of distinction between pathogenic streptococci obtained from different sources. The streptococcus of erysepelas has been distinguished from the streptococcus pyogenes by being more virulent to rabbits than to mice.

The test of virulence is, however, very fallacious, as will be shown by the following experiments. We obtained streptococci from the following sources : (1) A case of suppurating knee joint in a man ; (2) a fatal case of pyæmia in a child ; (3) a severe case of phlegmonous erysipelas in a woman ; (4) an abscess from a horse. One cubic centimetre of a twenty-four hours' old broth from each case was injected into the peritoneal cavity of a rabbit, and a large loopful of a twenty-four hours' old agar cultivation from each case was inserted under the skin of a mouse. In none of the cases obtained from the human subject were the animals affected, while the rabbit inoculated with the cultivation from the horse, died of septicæmia in twenty-four hours, and the mouse in two days.

Almost all observers have noted a great difference in the virulence of streptococci to animals even when taken from apparently similar cases in the human subject.

Marmorek has shown that streptococci obtained from various diseases in the human subjects, although differing initially in pathogenic effects on animals, can, nevertheless, be raised to the same pitch of virulence by repeated passages and cultivation in special media. He consequently looks upon the streptococci pathogenic to the human subject as all

simple varieties of the same species which can be converted into one uniform type by appropriate means.

Lingelsheim was the first to point out that the streptococcus obtained from the normal mouth differed from the streptococcus longus in three points. It was not pathogenic to rabbits or mice ; it rendered broth turbid, and the chains in this latter medicine were shorter than those of the streptococcus longus ; and it caused slight liquefaction of gelatine. He considered it a distinct species and called it the streptococcus brevis.

His observations have been confirmed by some investigators, while others have disputed his view. We have made a careful series of cultivation and inoculation experiments with streptococci obtained from the mouths of three healthy individuals, and have compared them with streptococci obtained from cases of pyæmia and phlegmonous erysipelas.

The details of the experiments we will not weary you with, but will only give you the main results. The streptococcus from the normal mouth differs from the streptococcus longus in the following points : (1) It is non-pathogenic when tested upon rabbits and mice ; but we have already stated that this test of virulence in the case of streptococci is not very conclusive. (2) It produces a uniform turbidity in broth cultivations. (3) It clots milk and produces much more acid than the streptococcus longus. (4) The individual cocci are smaller, and the chains, especially in broth cultivations, shorter. The length of the chains is not always a reliable criterion. Sometimes in the impure cultivation obtained from the mouth the chains are very long, and this is probably due to the medicine being altered in composition by the other bacteria present.

We have not been able to confirm the observations of Lingelsheim that gelatine is liquefied.

Slight differences have been observed in the streptococci

we have examined. Two of them grow more slowly in the cold than the other and present somewhat different microscopical appearances. The cultivations we are passing round illustrate these different points.

The conclusions which we draw are these :—The streptococcus occurring normally in the mouth, agrees with the streptococcus brevis of Lingelsheim, and can be distinguished from the streptococcus of disease by its biological and morphological characters. It must be looked upon as a distinct species for the present, although ultimately this view may be proved incorrect, for it is possible that further researches may enable us to convert the streptococcus brevis into the streptococcus longus. This, however, has hitherto not been accomplished. We think that the discrepancies of different observers who have investigated the streptococci of the mouth are partially due to the fact that the streptococcus longus is sometimes accidentally present and has been mistaken for the normal streptococcus of the mouth.

CROWNS.*

By Mr. W. R. READ.

Mr. President and Gentlemen,—The subject on which I propose to read a paper to-night is, in my opinion, one of the most important branches of modern Dental Surgery. I refer to Crown Work, and trust that the few words I have to say may be of interest to those present here to-night. Although this branch is considered by many to be quite an innovation of latter years, I think you will agree with me in saying that it is not so. In all probability it is one of the earliest forms, for in former days none but loose teeth were removed on

* Read before the Students' Society, National Dental Hospital.

account of the want of suitable instruments to perform that operation. The anterior teeth being the more prominent, and having hard work to perform in tearing flesh were undoubtedly liable to be broken. Most likely steps were taken to correct this disfigurement. It was conceivable that this broken part or the corresponding part of another tooth might be fixed in its place by means of a dowel or pin of wood or metal, passing into the pulp chamber and the canal. The earliest crowns were composed of portions of natural teeth, both of human beings and lower animals, and also teeth carved out of tooth like substances held in position with dowels of wood.

The first operation to be gone through before placing a crown upon a root is the process of obtaining the root in a fit state prior to shaping it to receive the crown.

In preparing for crowns that are to have a dowel or pin attached, it is necessary to devitalize the pulp should it be alive. This may be accomplished in the usual method with some preparation of arsenious acid, the pulp then being extracted with a barbed nerve bristle dipped in strong carbolic acid. The root canal being thoroughly cleansed and dressed with an antiseptic. In dressing the root it is advisable to use the rubber dam. If the root be not sufficient to keep the rubber dam on, the anchorage for it may be increased by placing a piece of fine binding wire, on which are two beads, around the stump at the gum margin and twisting tightly. The rubber dam can then be ligatured on in the usual way. Should the root be below the gum margin the collar should be first fitted on to the root and left higher than will be required, and the rubber dam applied over that. If the usual method of devitalization prove impracticable on account of the time it takes or of the broken down condition of the stump, another plan must be resorted to.

Take a piece of Hickory plugging wood, and with a file taper one end to a long fine point, then dip the point in strong

carbolic acid. Make as large an exposure as possible under the influence of cocaine or strong carbolic acid.

The patient should then be placed under the anæsthetic effect of nitrous oxide gas, and when under, the point of the peg should be driven sharply up the root canal with a small mallet, or if cocaine has been well applied to the pulp the peg may be driven up without using gas, and cut short. When the patient has recovered from the effects of the gas, the peg should be removed and what remains of the pulp extracted with a nerve bristle, and the root canal carefully cleansed and dressed.

The root canal now being in an aseptic condition it may be drilled out with root drills and reamers until the canal is sufficiently large to allow the entrance of the dowel. The next process is the shaping the root, but prior to this the gums should be rubbed with crystals of cocaine applied with the finger to render them insensible to any pain that might be occasioned.

If the crown is to take the form of a simple pivot the root should be cut down with stones and burs, so that it is well below the level of the gum in front and nearly level with it behind.

If on the other hand the crown is to have a collar, the root should be trimmed in front as before, but the back of the root should be left sufficiently high to allow of good hold for the collar. The enamel must be cut off the sides of the stump below the gum margin with enamel chisels and scalers to give a grip for the collar.

In many cases the root canal in front teeth comes considerably nearer the labial aspect of the tooth, so that a pin placed in the root canal, as it is, comes immediately under the artificial tooth, weakening the crown. This may in a great measure be remedied by cutting the root canal back with a drill towards the lingual wall.

When the crown is to be kept in position with a collar and no dowel, should the pulp be not already dead, it is quite unnecessary to kill it or trim the stump level with the gum, but should the pulp be dead, the root or roots must be cleansed and rendered perfectly aseptic. They should then be filled with some filling material, as Gutta Percha. Any carious matter or softened dentine should then be removed, and the stump carefully stripped of its enamel. This is best done by first cutting a line through the enamel, from below the cervical margin to the top of the root with an enamel chisel, and cutting a series of lines parallel to it around the whole circumference of the tooth. Then by means of enamel chisels the enamel is flaked off.

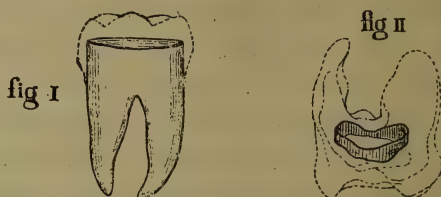
The root should be shaped as nearly parallel as possible, in order to give the crown a good hold. When the enamel has been taken off and the sides trimmed parallel, they should be finished smooth by passing a safety point shouldered fine file cut fissure bur around it.

When it is necessary to cut off teeth that look at all likely to split, a good plan is to drill two holes with a long chisel fissure bur through the tooth, one at the mesial and the other at the distal side of the tooth, these holes are then connected, and one blade of a pair of excising forceps placed in the labial, and the other blade in the lingual, and when the handles are pressed together, the crown comes off quite easily.

The first form of crown that I shall describe is the all gold molar and bicuspid crown, it being one of the simplest from the point of preparation, and one of the best from the point of utility.

Having carefully prepared the root, (see Fig. 1) make a collar of telephone plate and fit it roughly to the stump, then press a piece of softened composition to the band and stump,

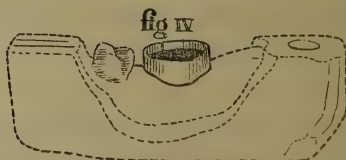
(see Fig. 2) and let the patient close the mouth biting into the soft composition. Allow this to cool, and when sufficiently hard, remove the composition and band from the mouth



together. From this impression cast a lower and upper model, leaving the band *in situ*, and showing the position of the gum around it. (See Fig. 3.) Over this band the collar



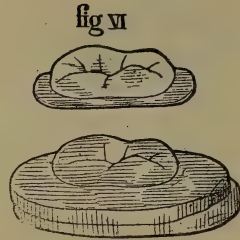
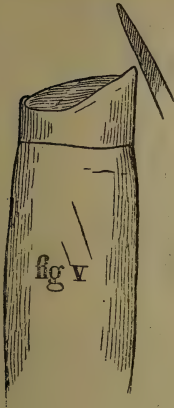
of the crown is fitted, being made in 22 carat gold (about No. 5 in thickness) and made to correspond to the gum margin, taking care that the joint is at the lingual surface. (See Fig. 4.) When the band has been fitted to the model,



soften a stick of composition and press the band into it, with the edge that is passed under the gum uppermost. (See Fig. 5.) This is then feather-edged with a fine file.

Take a piece of 22 carat gold the same thickness as the band, and strike up the cusps on a die-plate. (See Fig. 6.)

Try the cusps on an occluding model and see where they ride ; mark the spots, and place the cusps on the male die of



soft metal used in striking up, and with a blunt pointed punch, hammer down the parts marked. (See Fig. 7.) The articulation is thus made nearly perfect.



The cusps should now be thickened by filling them with filed-up solder mixed with Parr's flux, and melted over a Bunsen burner.

The patient should again be seen and the collar fine-fitted to the root. In order to make sure the collar fits the root perfectly, a bristle should be passed round the inside of the collar between it and the root, where the bristle will pass the collar does not fit accurately, and so should be altered until a perfect fit is thus obtained. The collar is then soldered edge to edge, keeping the joint together with binding wire. (Fig. 8.) The collar is now contoured with contouring pliers,

and again set in composition, (this time with the occluding surface upwards) and filed flat. (Fig. 9.) Remove it from



fig VIII



fig IX

the composition and try in the mouth with the cusps, and if too high, put on the stick of composition again, and file down until the correct articulation is obtained. Now place borax along the edge of the collar and adjust it in position on the cusps in such a manner that when the shoulder which is on the cusps is cut away the buccal and anterior surfaces will be perfect (Fig. 10); then hold in the flame of a



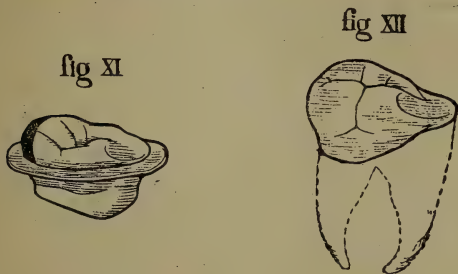
fig X

Bunsen burner. The solder in the cusps will melt and unite the cusps and collar together. (Fig. 11.) Boil in acid and fill the crown with composition and trim and polish.

Dry the stump and fill it and the interior of the crown with oxyphosphate cement of a creamy consistency and press on to the stump with a notched stick. (Fig. 12.) When the cement is set trim away the excess.

Should it be necessary to wire the collar and cusps together, one of the best methods to do it is to hold the cusps and

collar in position ; then take a piece of binding wire with a hook at one end, place the hook under one side of the collar and draw the other end across the top of the cusps down to the other edge and there bend under.



Another method of obtaining a model for a gold crown is to take a band made of Herbst metal shaped at one end like the tongue of a strap and having a slot large enough to take the strap. The band is then placed round the tooth and the strap passed through the slot and tightened around the root with pliers and bent over. This band is then pressed well down and a piece of softened composition pressed over the band and stump. The patient then closes the mouth and bites into the composition ; when set the composition is removed with the band in place, the upper and lower impression is then cast and the band taken off the model and split, giving the exact length of the collar required for the crown, leaving the plaster impression of the stump giving the articulation.

One of the best ways of preparing a set of dies (if one has not a set of steel dies or a die-plate) is to collect sound natural teeth of good shape and set them in fusible metal. This may be done by placing the tooth slightly in King's Crown Composition with the roots upwards. A band of gilding metal is placed around the roots and pushed a little way into the composition, and being sufficiently tall to be well above the roots. Fusible metal is then poured into the

ring until filled, and when cooled the made die is removed and fitted to a steel punch in which it is best used. Thus the striking face consists of a natural tooth and the body of fusible metal.

If a crown is to be made to a model of an awkward root requiring a lot of fitting, the root may be made of metal to avoid the model being rubbed. Fit a collar of matrix metal round the root and solder. Do not cut off the ends, but press composition around root and collar, and let the patient bite on it. When hard take out and bring the collar out in the composition; fill the collar with wax and set a pin in it with the head buried in the wax. Then make a plaster model of upper and lower; wash out the wax from the plaster model and dry. Then make a small hollow in the plaster model within the cap and pour in soft metal until the collar is full; when set remove the collar and one has a fusible metal cast of the stump which is removable. When placed on the model it is kept firm owing to the pin and hole in the plaster.

The next crown is the Logan crown, and at the same time I should mention the New Richmond crown.

In fitting the Logan one simply fits the root roughly to the Logan, and fine-fits the crown to the root with paint in a similar way to fine-fitting a tube tooth. Take great care that the cervical margins are well below the gum both front and back. The method by which it is fastened in position is simply to put a small quantity of thin osteo cement up the root canal and a little on the dowel of the crown and press up into position with a notched stick and hold there till set and then trim off excess of osteo.

In the New Richmond crown, the root is wholly fitted to the crown. It is sloped down at a sharp angle well below the gum margin both front and back leaving a V-shaped

ridge in the middle of the stump. This crown is fastened in a similar way to the Logan.

The simple Pivot crown is easy of preparation, and in most cases gives a satisfactory result. The root is shaped in a similar manner to a Logan, except that it is not cut down quite so much at the back. A piece of wire (either gold, platinum, or D.A.) is fitted well up the root canal, and the upper end at the top of the root is slightly bent over. A piece of platinum foil is then perforated with a hole large enough to take the wire, and then put on the root with the wire running through. It is next burnished over the end of the root, trimmed to size, and soldered to the pin, and then placed in position and burnished again. An ordinary flat tooth is now picked out, of the right size and colour, and fitted to the foil, backed, and the pins turned over. It is next waxed in position, invested in a suitable material, wax washed out, dried, and soldered. It is then filed and polished, the pin roughened, and fixed in position in a similar way to a Logan.

To make a faced molar or bicuspid crown, make a tall collar fitting accurately to the root, solder it and fix the collar on a stick of composition, and with a safety file cut out in front an opening square at the bottom to take the face leaving only a narrow band below the gum margin. Then fit a flat frontal pin tooth to the space, cut off square at the bottom, and slanting from behind forwards at the top.

The tooth must be backed from the front edge, at the bottom, round the sides to the front edge at the top. The cusps are now struck up and fitted to the top of the crown and filled with solder. The tooth and collar are next invested and soldered in position. The top is now adjusted in position and the whole invested, and the cusps soldered on from the inside, the crown is then filled with composition filed and polished.

The Richmond collar crown. In this the root is trimmed down well in front, but left standing at the back. The enamel is trimmed off from all sides to below the gum margin. A narrow band of gold is fitted around the stump curved at each side to allow for the alveolar process and feather edged at the bottom ; it also must be bevelled in front so that the whole of the collar is below the gum margin in front. This is then soldered and fitted in. If it fits perfectly a piece of thin gold is soldered on the top, and a small hole large enough to take a piece of pin wire is made in a straight line with the root canal. A piece of gold pin wire is fitted down this and soldered to the cap. A flat tooth is then fitted and backed with gold, and the crown is finished in the same way as an ordinary pivot. To fix this crown in position, a small quantity of thin osteo is worked up the root canal and a little placed on the roughened pin, and inside the cap of the crown. Press up into position with a notched stick and hold till set ; then remove excess of cement.

Lastly, I should like to say a few words on the process of making removable crowns.

The root is trimmed as for a Richmond Crown, but the root canal reamed a trifle larger. The next proceeding is to make a tube (to take a piece of gold pin wire) of 22 carat plate, and solder the seam. A collar cap is then adjusted to the stump as in a Richmond (the tube being used instead of the pin) and soldered to the cap. A piece of platinum foil with a hole in the centre is burnished over this cap with a piece of pin wire, split half way up, passing through it into the tube and soldered. On this foil and wire is constructed an ordinary pivot, which is removable in and out of the tube cap, but at the same time firmly held by it, a piece of pin wire is passed down the tube, and the tube and cap are cemented into position with osteo or amalgam, when set, remove the

piece of pin wire, and press the removable pivot up into position. Preparatory to putting the pivot into the cap, they should be kept apart with a small piece of gold foil inserted into the split.

[For the use of the blocks we are indebted to the Odontological Society of Great Britain.]

RESIDENT *versus* VISITING DENTISTS.

By L.D.S., (Rus.)

The gradual drifting of our country population toward the great towns, the decline of the villages, and stagnation of the lesser market towns, is a feature in modern English life lamented by politicians of every shade. There is the same tendency even among dentists to crowd and jostle one another in the suburbs of London, Liverpool, Manchester, Birmingham, and other overgrown centres, and to leave the outlying districts to the tender mercies of the weekly visitor.

There comes a time in most men's lives when they wish to strike out for themselves. To buy or not to buy is often the question. Now inasmuch as no man can purchase the personality of his predecessor, and dentistry is a purely personal affair between patient and operator, a candidate for the suffrages of a dental constituency had better woo and win his clients by his own individual efforts.

Let us take the case of a young man blessed with a very few hundreds capital. Where shall he pitch his tent, and what section of his fellow countrymen endow with all his latent energy and skill.

Strange as it may seem to the thorough Londoner, the mighty wen has no great attraction for some of us. Its absence of true corporate life, the lack of neighbourly interest in local affairs, and the utter loneliness of the crowded city to an unknown provincial, are depressing in the

extreme. Shall our recruit plunge then amid the aristocratic regions of the West End, and by a little name plate, one of five, on a front door, seek to tempt the duchesses and bishops to enter in. One might as well go a-fishing in the Sahara desert. Or taking the other extreme would he cultivate a philanthropic and commercial spirit, and offer to fit the million with teeth at wholesale prices ; he finds the ground *covered* by the American Institute type of benefactors. Once again, let him take a middle line, and thrust his shoulders in among the crowd of young suburban practitioners, each probably with his own circle of friends and acquaintances ; and by dint of a smarter house and furniture, a more fetching pair of maid servants, and a shinier Sunday suit, claim his share of patronage. Alas for his narrow capital, with rent and rates and crack establishment. Unless the tide flows his way very soon, he will envy the village blacksmith who looked the whole world in the face, for unlike him, he owes just every man.

Omitting then London, Liverpool, Manchester, Birmingham, Glasgow, Edinburgh, Dublin, and a few other places where dentists of home manufacture stand the best chance of success, I mounted my trusty pneumatic one fine day recently, to investigate for myself the dental conditions of supply and demand in the provinces. Summing up the results of these investigations pursued in scores of towns, great and small, and condensing the questions, worthy of a Royal Commission, propounded to local drapers, grocers, postmen, and, alas, Innkeepers, I arrive at the following conclusions.

That about ten thousand people on an average, are sufficient to support a dentist, and that four doctors, and five and twenty publicans are found for every dentist. That the country towns of from twenty to one hundred thousand inhabitants are for the most part well supplied with qualified resident men, but the lesser places of under ten thousand are put off

with visiting dentists, many of whom have absolutely no right to practise at all.

In one little town of about 4000 souls there were no less than three dentists calling for a few hours every market day, and no resident dentist ; although the villages and farms clustered thickly around the place. Contrast this with another similar market town where I found an old gentleman who had lived and practised there for 40 years, brought up a family respectably, saved a moderate competence, and taken an active share in the municipal life. He could tell with pride of stoppings in the mouths of his patients who were also his close personal friends, that had stood the test of 30 years. Better this than the fevered rushing to and fro of our visiting brother from his congested suburban district, with his inadequately fitted branch surgery and time wasted on road or rail.

The resident plan is better for the town, in that the local tradesmen benefit by some return from the fellow citizen who reaps his income among them, instead of seeing black bag and dollars disappear townwards at the close of the market day. The dentist lives in probably a purer atmosphere, with roomy house and garden at half the cost of London accommodation, and all the weapons of his profession in working order around him. If his work proves faulty, he is close at hand to rectify it, and by the quality of his work must he stand or fall. The visiting professor is on the other hand often a man of straw, or looks upon the stand as a temporary affair.

Rural English life needs reviving. If educated workers like our modern style of dentists lived among the wholesome surroundings of our lesser market towns, and catered for the residents and villages hard by, they would help to turn the tide back again from town to country.

British Journal of Dental Science.

LONDON, AUGUST 1, 1896.

THE ENGLISH L.D.S.

The L.D.S. diploma of the Royal College of Surgeons of England—not degree as it is so often miscalled—has been established by law for eighteen years. Before this it was a purely voluntary affair. The more enthusiastic and far-seeing members of the profession obtained permission of the College to present themselves for examination, and their example was speedily followed by many more. The new diploma was looked upon with dislike and suspicion by two classes of dentists; by many of those who had the membership of the College, and by many more who had practised like their fathers before them, without any qualification, and who did not see the necessity of the innovation. As regards the former class, they found that to attain to the highest grade of the specialty, the special diploma was indispensable, while the great mass of the profession who, like Talleyrand, “did not see the necessity,” found that the State did, and that the compulsory examination and registration was not to fulfil the wishes of a certain section of dentists, or to create a monopoly, but for the protection of the public. This statement requires emphasising even so late in the day as the present time.

The examination, like everything else, has suffered a process of evolution. The early examinations were simple compared to that which has to be undergone nowadays. In the written papers, not only are the questions more searching and extended, but the quality of the answers expected is much higher. In the practical part too, the Candidate is expected to be conversant with the best and latest methods of employing his filling material, and for preparing the mouth for the same. The examination in lesions and de-

formities of the mouth and jaws is becoming wider in its scope, and the appliances more and more ingenious. The mechanical portion of the examination—too long neglected we regret to state—has at last received more of the attention which its importance demands. The Candidate who at the present time enters without being prepared to make and fit a crown to a stump and bite, turn up and solder bands, strike up and solder a strengthened gold lower plate, or adjust tube teeth to a plate and bite in a creditable manner, stands a poor chance of obtaining the coveted diploma. The tendency is still for the test to become more critical, as those of our readers who saw the short paragraph upon the subject in our last issue, will admit. Under the new scheme which has been received and adopted, the examination will be divided into three parts. The first examination will consist of chemistry, physics, and practical chemistry. The two concluding examinations will be in professional knowledge, the first being in mechanical dentistry and dental metallurgy, and the last in general and operative dental surgery with anatomy and pathology.

We consider that this is a move in the right direction. The examination as at present conducted tends to make the student cram up a host of different subjects, his examination in which—as well as his mechanical and operating work—all take place within three days. This is a strain upon the candidate, his teachers, and his examiners. We think that a truer estimate of a students' abilities will be gauged when he is allowed to clear off his subjects at stated intervals, and is not permitted to present himself for the next examination until the prior one is passed. The examination as at present constituted is in many ways the best in the world, and we can say without fear of contradiction, when the new rules come into force, the L.D.S. England, will be by far the first dental diploma in the world. When they will come into force we cannot yet say, but we should think it would not be before November, 1899. The point whether examiners should also be the candidates' teachers is a moot one. Some candidate who has not perhaps a happy manner, or who

suffers from some disability, may not receive absolute justice, while another candidate with a ready tongue and an engaging manner may receive more than is his due. But nothing is perfection, and we think that with very few exceptions the examiners' *fiat* is a just one. Another point for criticism also occurs to us, whether a man who has failed in his paper should be kept in ignorance of the fact, and allowed to go through his operative work, etc. In Ireland we believe he is not allowed, but we think that perhaps the experience gained by the unsuccessful candidate, is of distinct advantage to him on a future occasion. We shall await the publication of the new synopsis with great interest, and feel sure that it is another step to raise our profession to the respected position we all wish to see it attain.

PICNIC OF THE NATIONAL DENTAL COLLEGE STUDENTS.—Outdoor functions this year have come off very well, the "glorious god of day" as Mr. Micawber calls the sun, being extremely liberal of his presence. There was no exception to the rule on Tuesday, July 14, when most of the Students of the National Dental College having chartered the electric launch "Eta" proceeded from Maidenhead up the river as far as Medmenham. They were accompanied by a few members of the Staff who tried to imagine they were students once again, and at times almost succeeded in the attempt, in spite of the "exigencies of a busy practice"! The arrangements reflected the greatest credit upon the Committee of Students who took the matter in hand. The saloon carriages, the launch, the luncheon and tea were all provided and arranged in a manner to please the most fastidious. The return trip was if anything pleasanter than the outward one as the weather became cooler. We hope the event may be repeated in succeeding years. We have carefully refrained from enquiring how the work of the hospital was got through that day!

A DENTIST AMONG THE SMALL-POX.—We notice that the *British Medical Journal* under the title of "The limits of a

doctor's duty," has criticised the above paper which appeared in our issue of July 1st. It complained that the paper was couched in not very friendly terms towards the medical profession, and threw doubts upon the accuracy of some of the statements contained therein. We certainly do not entirely approve of the paper, although we published it as being of interest at the present time; we think some of the remarks too personal and sweeping. We are glad however, the *British Medical Journal* has drawn attention to it as there are points in dental hygiene which doctors can and ought to point out to those in attendance upon fever patients. Our pages are always open to honest criticism and in the meanwhile we may suggest to the writer of the original article, that he must do his best not only to instruct the medical profession and the public in oral hygiene, but also must be careful to leave no joint in his own armour open through which the shaft of hostile criticism may pierce.

A LIBERAL GOVERNMENT.—Liberal, not perhaps politically, but dentally, is the Government of India. A gunner of the 49th Field Battery of Secunderabad whilst on duty had his teeth knocked out by a kick from a horse. Upon the recommendation made by the Lieutenant-General Commanding the Forces, the Government of India has specially sanctioned the supply, at a cost not exceeding 150 rupees, of artificial teeth for the disfigured warrior. We think that it is no more than the Government's duty under the circumstances but we wish to point out that Tommy Atkins loses immeasurably more teeth through decay than through accident, and it is for the preservation of these that the services of the dentist are most called for.

THE CAREFUL DENTIST.—*The Family Doctor* has a very sensible little article under this heading, pointing out that the cry of the public and of the quack of "painless dentistry"

is an absurd one. "Often," it says, "the dentist who does not hurt in preparing a cavity for filling, is not properly doing his work." A few words upon seeking the dentist in good time brings this well written and commonsense article to a close.

THE DENTIST IN SHAKESPEARE'S TIME.—An interesting letter from the Bishop of Winchester to Mr. (afterwards Sir) William More, has lately been unearthed. It bears date August 19th, 1572, and contains this interesting paragraph: "I doe remember that you tolde me of one whome you knewe being skillful in trimming and stopping of tethe, if you can cawse the same fellowe to come unto me aboute that purpose you shalle greatlie pleasure me." This certainly looks as though any skill in dental science was at that time a rarity, and that even the best of operators were held so low in esteem that the term "fellowe" was thought good enough by way of description for them.

ARTIFICIAL TEETH MANUFACTURER.—At the Blackburn County Court, J. Howell, who described himself as an "Artificial Teeth Manufacturer," was sued for £4 17s., by Mary Elizabeth Fielden. It appears that she agreed to purchase a set of false teeth from Howell for £6 10s., after he had extracted twenty teeth from her at two sittings. After waiting a certain time defendant took an impression of her mouth, and the teeth were made. She says they did not fit her however, and ultimately after continually taking them back, the defendant re-moulded them for her. It seems they still did not fit her, so the action was brought to recover £3 16s. which she had paid in instalments, and £1 1s. for the pain she had experienced. She did not know that Howell was an unqualified dentist when she visited him. The witness for the plaintiff was one Randolph Sleight, who is described as a qualified chemist, though why a qualified chemist should be an expert in dentistry, passes our com-

prehension. In spite of this expert testimony, however, Howell won his case, as the Judge held he had performed his contract. Putting the question of qualification on one side, while wishing the law were more stringent, it seems to us the matter (which was entirely on a trade, not a professional basis) to be decided was simply whether the goods supplied were of the quality demanded, and paid for or not. The Judge evidently thought they were.

PRACTICE FOR GAIN.—There is no doubt that in the above case, the plaintiff was deceived by the assumption of a title by the defendant implying he was qualified to remove her teeth, and to supply her with substitutes. As Mr. C. S. Tomes says, "In England to a greater extent than in almost any other country, the quack has a free hand and is exposed to less punishment even when brought to conviction. The law should unquestionably be altered so as to make the act of practice for gain, and not the mere assumption of titles, the punishable offence, and nothing short of this can really efficiently protect the public." Looking at the "Massacre of the Innocents" just perpetrated by the Government, we are afraid a bill to amend the Medical and Dental Acts would not stand much of a chance at present, but come it will ere long. The fool must be protected and the knave checked.

ADMINISTERING NITROUS OXIDE.—Especially in English dental journals do we see directions as to the use of the "gas bag." Gas should always be given from a gasometer arranged so that the volume of gas comes freely and with even pressure. If it is given from the bag, the pressure varies greatly, and the effort in breathing from the partially collapsed bag enhances the danger.—*Western Journal*.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, June 1, 1896. Mr. David Hepburn, L.D.S.Eng., President, in the chair.

Messrs. Badcock and Brunton were appointed scrutineers for the ballot.

The following gentleman was elected a member of the Society:—Charles Sydney Prideaux, L.D.S.Eng.. Dorchester, Dorset.

The Treasurer (Mr. Hutchinson), in presenting his annual report, said, that it was with great regret, that he felt unable any longer to discharge his duties, on account of the pressure on his time, and he therefore deemed it best to resign, as he could not hold any office which he could not fill to the best of his ability. He desired to thank the large majority of the members, for the kind way in which they had fulfilled their obligations, and this had much lightened his labours, but to a few, whom he had to remind of their debts, he would say that as the subscriptions were due in advance, according to the bye-laws, those debts were "debts of Honour," and so could only be dealt with by occasional reminders! In handing over his duties to his successor he was sure that Mr. Woodruff would merit the entire confidence of the Society.

There was a very handsome amount invested in Consols, but as the future arrangements of the Society, as to its habitat, were very uncertain, this sum must not be encroached upon, as it would probably be wanted to secure a permanent home; and as it had been so jealously guarded, and so carefully accumulated by his predecessor, Mr. T. A. Rogers, he trusted the members would do all in their power to maintain and increase it.

In conclusion, he thanked the Council and the Society for their great kindness and consideration during his term of office.

Mr. W. A. MAGGS (Librarian) reported the receipt of nineteen bound volumes of the *Transactions of the Clinical Society*, 1878 to 1893, from Mr. Storer Bennett, in addition to the usual periodicals and exchanges.

He then presented his annual report. He said the list of exchanges had been slightly increased during the past year.

The *Transactions* were presented to the libraries of the

Royal Colleges of Physicians and Surgeons, and to the University of Berlin.

The Society had continued to subscribe for *The Dental Cosmos*, *Journal of Anatomy and Physiology*, *Journal of Pathology and Bacteriology*.

The following periodicals were sent gratuitously, and were gratefully acknowledged:—*Chicago Dental Review*, *Journal of the Pharmaceutical Society*.

He stated the sub-librarian had continued in attendance on Mondays and Fridays, from 6.45 p.m. to 8.45 p.m., and at these times the library had been used as a reading-room. Books could be borrowed on the above-named evenings, or at any other time by written application, in which case the books were left with the hospital Porter. The number of members who had made use of the library for reading purposes during the year, from June 1, 1895, to May 31, 1896, had been thirty-two, and the number of visitors during the same period forty-two. The actual number may have been exceeded, but members and students had signed the attendance book as stated. The number of books borrowed—a privilege now confined to members only—during the year was forty-four, as compared with ninety-two for the preceding eighteen months.

He concluded the report, which he ventured to think satisfactory, by saying he would be glad to receive any suggestions from members. He referred to the fact that a book was on the library table in which the name of any book wanted might be entered, and it was needless to affirm, the Council usually accepted with pleasure such recommendations.

Mr. STORER BENNETT (Curator) in presenting his monthly report said: I have to present to the Society this evening, two specimens of comparative dental pathology, presented by Mr. Morton Smale, to whom we are indebted for so many valuable contributions to our Museum in this particular sphere. The first is the skull of a female gorilla, showing on the inner side of the mandible a certain amount of absorption in the alveolus which one might look upon as a somewhat early stage of pyorrhœa alveolaris, but as we have only the bones to go by, it is difficult to be quite certain that such is really the cause of the condition seen. As a matter of fact the bone on the inner side of the mandible does show very much the appearance that one gets in a certain stage of pyorrhœa alveolaris. The other specimen which Mr. Smale

has presented is also that of a female gorilla. There has been a loss on one side of two molars with a very large cavity of absorption of the alveolus, and on the other side the first and second molars have been lost. The loss of bone on the right side is very considerable. These specimens are both of them interesting, because as gorillas have never been kept in captivity, the cause of the condition cannot be put down to the animal being kept in confinement. I may say also that in this specimen there is a tilting of the right lower premolar the result of the loss of the first and second molars, which of course suggests to one's mind that early extraction had been performed.

With regard to the work of the Museum for the year, I think the number of contributions, although less than I had to record this time last year are satisfactory. There are thirty-nine, last year at this time they were forty-seven. But it is only fair to remember that we are now dating for twelve months, whereas previously we had to deal with seventeen months, the annual meeting having been changed from January to June. The number of visitors who have been in the Museum during the last twelve months have been thirty-nine, nine of them being members of the Society and thirty of them visitors. Last year we had thirty-six visitors and seven members. Therefore we have I think, a very fair average attendance during the year, although I must say I wish more members would take an interest in the Museum, and visit it on the three nights a week it is open for two hours. There is a sub-curator in attendance to point out any specimen which a person may wish to examine, and to give any directions as to what kind of specimens we have or where they are to be found. Therefore I am sure that members and other visitors would be repaid if they would take the trouble to come to the Museum sometimes during the year.

Following the precedent of former years, I have placed on the table all those specimens given to the Museum during the last twelve months, and I think they illustrate a very fair range of subjects of comparative, as well as human pathology, and if the Museum progresses as satisfactorily in the future as it has done during the past, I am sure we shall all be proud of being in possession of a perfectly unique collection, such as is not in any way rivalled by any other Museum with which I am acquainted. We have absolutely no rival at present in the field we occupy.

CASUAL COMMUNICATION.

Mr. BOYD WALLIS exhibited a tray for annealing gold for filling purposes, heated by electricity. The lamp was one of very low elevation and convenient shape which had been specially prepared for him by Messrs. Edison and Swan, a 100 volt lamp of 32 candle power. He found that method of annealing especially useful in connection with sponge gold. As showing the power of the lamp, he stated that water could be boiled in about twelve or fifteen minutes; he had had one of such lamps in use for the last two or three years.

Dr. Washbourn then read a paper "On Some Points in connection with the Bacteria of the Mouth," by Mr. Goadby and himself, which is published at p. 673.

DISCUSSION.

Dr. H. E. DURHAM said the Society ought to be very grateful to Dr. Washbourn and Mr. Goadby for the careful work they had done in separating the different varieties of streptococci. There was no doubt that at the present time streptococci were extremely important in infective pathogenic processes in man, especially now that the method of treatment by the serum of animals had shown itself to be so useful. They were all aware that serum prepared by means of streptococci had been prepared and largely used already. A certain number of cases which had been treated had not responded at all; in other cases the effect of giving an injection of anti-streptococcic serum had been most marvellous. He thought it clearly pointed to the fact that the streptococci which were present in various pathogenic conditions in man were not of one and the same species, and it was distinctly an advance to have classified some of the various kinds of streptococci.

Mr. PACKES said that Mr. Goadby had taken several cultivations from his mouth, and he believed some of the cultures which had been shown that evening had been taken from his own carious teeth. He agreed with Dr. Washbourn that there were gentlemen who were certainly not as careful with their instruments as they might be.

Mr. PETERS asked whether any relation existed between the acid producing streptococci and caries of the teeth.

Mr. J. H. MUMMERY said with regard to the pathogenic effect of the streptococci of the mouth, there was a paper by M. Gallipe, published in Paris, in which he described a case of endocarditis definitely due to infection from the mouth.

The paper was amongst a collection of the author's papers which were published quite recently. Mr. Mummery thought too much attention could not be drawn to the question of the antiseptic treatment of instruments. He thought that many dental surgeons were not careful enough in that matter. The only safe way, in his opinion, was to put the instruments into boiling water as soon as they were done with. He would like to know whether the alteration of the appearance of the cocci, the oval and round cocci, was not due to alteration in the nutrient condition of the medium in the mouth. Sometimes there was a diminution of the nutritive power, and then transition forms were obtained and not typical forms. He thought that Dr. Miller had stated with regard to the pneumonia bacillus that it was very easily killed. It succumbed much more easily to certain antiseptics than most of the other organisms. In experiments with saccharine and benzoic acid Dr. Miller found that that was one of the first organisms destroyed.

Dr. ST. CLAIR THOMSON said he was very anxious to hear what became of all the bacteria in the mouth, and he might be excused a moment if he referred to what he found became of the bacteria in the nose. He found the majority of the bacteria inhaled were stopped at the entrance of the nose, and the remainder stuck to the gluey mucus lining the cavity, whence they were rapidly turned out by the ciliated epithelium. Some continental observers claimed the mucus of the nose to be distinctly bactericidal. It had even been asserted that it would kill the spores of anthrax. He and a colleague of his, Dr. Hewlett, had tried over and over again to confirm that fact, but they completely failed. However, they found it had one distinct virtue, viz., that it inhibited the growth of bacteria, which was, of course, something in the same direction, but was different from bactericidal action. It seemed to him that there was no need for the mucus to be bactericidal, because the germs, as they landed on the mucus of the nose, were prevented from developing and then expelled by the ciliated epithelium. While studying the bacteria of the nose he had been astonished at the swarms of organisms that were met with in the cleanest of mouths. Dr. Washbourn had said that the saliva was germicidal. He should like to know whether the saliva was sufficient to meet those hordes of bacteria. He would suggest that the bacteria were wrapped up in the saliva, and when thus rendered inoffensive were swallowed. He was anxious to learn Dr.

Washbourn's views as to the fate of all the organisms in the mouth. He would also like to know if it had occurred to Dr. Washbourn whether the bacteria were present in greater quantities in mouth breathers.

Mr. STORER BENNETT said a remark had been made by a member with regard to the acid generating powers of the streptococci, the probability being suggested that those organisms had the power of generating acids that might be the cause of caries. Mr. Bennett thought that was an erroneous view, because Dr. Washbourn had distinctly stated that the streptococci were always present in the mouths of the healthy as well as the mouths of diseased persons—in the mouths of those people who had absolutely no decayed teeth, as well as in those who had a large number. Therefore it was obvious that although they might generate a certain amount of acid, it was not fair to jump to the conclusion that the acid generated by them was the acid capable of producing caries. It was obvious to all of them he thought, who were familiar with the work of Dr. Miller and others working in connection with caries of the teeth, that much more was necessary to produce caries than these streptococci, even though it might be true they had the power of generating acid.

Mr. SIDNEY SPOKES said he was reminded by Dr. Washbourn's allusion to puerperal fever, that one of the members of the Society had placed upon record certain instances which he thought might point to the infection in puerperal fever being derived from the nurse's mouth. The nurse—he did not mean the modern nurse, but a nurse of the "Sairey Gamp" character—might be suffering from an alveolar abscess, and unconsciously might press the tender tooth with her hand, and inoculate the puerperal patient. From what Dr. Washbourn had said, the streptococci need not come from the abscess itself; any irritation might lead the nurse to put her finger into the mouth and convey some of the streptococci Dr. Washbourn had told them about into the vagina of the patient.

Mr. GOADBY, in reply, said that Mr. Durham had given him personally a good deal of help in the matter. With regard to the classification of the streptococci, the point was that in various common media the streptococcus brevis gave a good many different reactions. They could not simply take the morphology of the two streptococci and say one was the brevis and the other the longus. They must cultivate

on all the various media and get the different reactions—clotting of the milk, the growth on the gelatine, &c. They grow very badly on gelatine and on potato. On potato both of them involuted a great deal, but he thought the streptococcus longus involuted the least. Mr. Peters had said something about the acid production, and Mr. Storer Bennett, he thought, had the idea that he (Mr. Goadby) meant that caries was produced by the acid of the streptococci alone.

Mr. STORER BENNETT said that was what he inferred from the earlier remarks.

Mr. GOADBY said with regard to that point nine-tenths of the bacteria produced acid, and all they wished to point out was that the streptococci found in the mouth did produce acid and the pathogenic ones did not.

Dr. WASHBOURN also replied, he said that Dr. Durham had referred to the serum treatment of streptococcal infections. A very good case came under his care, the case of a boy who shortly after the removal of a tooth was taken with severe symptoms of septicæmia and cerebral disturbance. They felt quite satisfied that he had some commencing meningitis, and also that the probability was that it was due to a streptococcal infection. A little of the pus from the tooth was examined and streptococci were found. Unfortunately they did not test the virulence, nor did they make a careful series of cultivations in order to see whether it was the streptococcus longus or some of the streptococci from the mouth which had accidentally entered into the tubes. They treated the case with serum with most remarkable results; very soon after the injections the boy got better and ultimately completely recovered. With regard to the case of ulcerative endocarditis, that occurred from infection through the mouth, he had no doubt that the pathogenic streptococci were sometimes present in the mouth and that septicæmia might be produced in that way when any wound of the mouth occurred. As to the shape of the cocci, they varied according to the medium in which they were cultivated. In comparing any micro-organisms, of course the cultivation should be made under exactly similar circumstances, and when they stated that the individual cocci were smaller in the streptococci brevis than in the streptococci longus, they meant when they were cultivated upon broth having exactly the same composition. As a matter of fact, if the streptococci were cultivated upon potato, the cocci became elongated and looked like bacilli.

With regard to the presence of pneumococcus in the mouth, there were very many observers who said it was almost constantly present, but he had some doubts as to whether those observers had not sometimes mistaken the streptococcus or the pneumococcus. Dr. Thomson asked what became of the bacteria of the mouth. He (Dr. Washbourn) had no doubt that some of them were destroyed by the saliva, and that others were swallowed and were destroyed by the gastric juice. The gastric juice had fairly good antiseptic properties. As to whether there were more bacteria in the mouths of those who breathed with their mouths open, no experiments had been made. Puerperal fever might arise from any septicæmic conditions such as the one which was referred to ; in an alveolar abscess there were virulent streptococci, and those might very well have produced the disease.

A vote of thanks was accorded to the authors for their paper.

The PRESIDENT having announced that the office bearers nominated by the Council had been unanimously approved, delivered his valedictory address.

Mr. HUTCHINSON proposed a vote of thanks to the President, for his address, and for his services in the Chair during the past Session, which was carried by acclamation.

Mr. Hutchinson said that Mr. Hepburn was so well known to all of them, and so deservedly and universally popular, that any words of his would be superfluous, but it was only right that their sincere congratulations should be offered, not only to the President, but to the Hon. Secretaries, for the very interesting and valuable series of papers and communications which had been provided, especially as they embraced almost every branch of practical and scientific dental surgery, and besides this, several papers had dealt more particularly with collateral surgical matters of much importance.

Mr. Hutchinson alluded to the interesting fact that so many Presidents of the Society had been followed in due course in the Chair, by their sons ; and he was proud to say that no charge of nepotism could be laid at their doors, as all the sons had richly earned their high position, independently of their distinguished fathers ; and of these he would mention Mr. Cartwright, Mr. Rogers, Mr. Tomes, Mr. Mummery, Mr. Hepburn, also Mr. R. H. Woodhouse, whose uncle has been President.

Mr. Hutchinson spoke feelingly of his first visit to the Society when a Student, for Mr. Hepburn's father was then President; and it must be gratifying to them all to know that Mr. Hepburn, senior, was still amongst them, and it must be very gratifying to him to see his son so highly esteemed, and so worthily maintaining the best traditions of a Society which had done so much to promote the progress and honour of the dental profession, and to its pioneers their best devotion was due.

The vote of thanks was carried with acclamation.

The PRESIDENT briefly responded.

Mr. MUMMERY moved that a hearty vote of thanks should be given to Mr. Hutchinson for all he had done for the Society. Mr. Hutchinson had been really holding office for many years. He began as Secretary in 1879, was Curator from 1881 to 1885, Vice-president till 1888, President in 1891, and had been Treasurer for the last three years.

The motion was carried with acclamation.

Mr. HUTCHINSON having briefly replied,

Mr. BRUNTON moved that the best thanks of the Society should be given to the Council and the Officers, which motion was also carried with acclamation, and Mr. COLYER replied.

The following members were elected as officers and councillors for the ensuing year :—

President :—R. H. Woodhouse.

Vice-Presidents :—Resident : John Fairbank, C. J. B. Wallis, John Ackery. Non-resident : George Henry (Hastings), J. F. Cole (Ipswich), Malcolm Macgregor (Edinburgh.)

Treasurer :—W. H. Woodruff.

Librarian :—W. A. Maggs.

Curator :—Storer Bennett.

Editor of Transactions :—J. F. Colyer.

Honorary Secretaries :—J. H. Mummery, (Foreign), C. Woodhouse (Council), H. Baldwin (Society).

Councillors :—Resident : J. Gartley, C. Robbins, S. Spokes, A. Smith, G. D. Curnock, H. J. Goule, J. O. Butcher, H. L. Albert, H. J. Kluht.

Non-resident : T. Arkovy (Budapest), A. W. W. Baker (Dublin), F. E. Huxley (Birmingham), G. Cunningham (Cambridge), C. B. Mason (Scarborough), J. J. Andrew (Bel-fast), E. N. Washbourne (Ripon), J. S. Amooore (Edinburgh), W. R. Ackland (Bristol).

STUDENTS' SOCIETY,
NATIONAL DENTAL HOSPITAL.

An ordinary meeting of this Society was held on Friday, May 8th, 1896. The President, T. G. Read, Esq. in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome was given to visitors.

Mr. Stevenson was balloted for and was unanimously elected.

The following gentleman was proposed as members of the Society, to be balloted for at the next meeting:—Mr. Oaten.

Upon Casual Communications being called for, Mr. Jessop showed a model of the upper jaw which had the second bicuspid erupted at the lingual side of a small conical wisdom. He also showed a model of an upper jaw which had four laterals in the line of the arch.

Mr. C. Browne-Thomas showed two molars, both of which has pulp stones at the neck on both lingual and labial aspects.

The President then called upon Mr. C. Browne-Thomas for his demonstration on "The tinting of porcelain teeth, and the contouring of crowns with porcelain."

Mr. C. Browne-Thomas gave an interesting demonstration building up the back of incisor or bicuspid crowns with porcelain, the firing taking about five minutes. He also demonstrated a method of quickly tinting teeth to any colour to meet the various colours and stains often seen on natural teeth, such as tobacco stain, the fixing of these taking about three minutes.

An ordinary meeting of this Society was held on Friday, June 5th, 1896. The President, T. G. Read, Esq. in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome was given to visitors.

The following gentlemen were then ballotted for, they were unanimously elected:—Messrs Williams, Griffiths, Burton, and Oaten.

The following gentlemen were proposed as members of the Society to be balloted for at the next meeting:—Messrs. Renton and Ybanez.

Upon Casual Communications being called for, Mr. C. Browne-Thomas brought forward a case of protrusion of the upper teeth of a patient aged 16. The six year old molars were extracted and the teeth drawn back with Angle's apparatus, the whole case taking about fourteen months.

Mr. L. H. Canton showed for Mr. Pedler a case of true gemmination of the upper wisdom and second molar. Also a bicuspid with three roots which had been extracted from an English lady in Bombay. The President showed a first right upper molar with the palatal root curved much inward. Mr. Farmer showed a left lower wisdom conical in shape with the apex of the cone at the crown.

The President then called upon Mr. W. R. Read for his paper on "Crowns," which is published on page 686.

DISCUSSION.

The President thanked Mr. W. R. Read for his interesting paper, and said that he agreed with him that crowning was one of the earliest operations performed in the history of Dentistry, for the Egyptians professed to crown rather than extract, so that no friend should know that they had lost a tooth. Crowns fixed to roots, by means of wooden dowels, has been found in mummies. There was no method of crowning known to-day that was not known and practised forty years ago. He agreed with Mr. W. R. Read, that trimming the sides of the roots parallel was better than trimming them cone-shaped, because if trimmed cone-shaped, if the crown was pushed up farther than was originally intended, it would not fit at the neck, and thus form a place for lodgment of food, mucus, etc., and thus cause irritation.

Mr. MACFARLANE said that he thought that if the edges of the joint of the collar were bevelled so that it overlapped, it would make a much stronger joint when soldered. He also would like to know what solders Mr. W. R. Read used.

Mr. C. BROWNE THOMAS said that he had never seen or practised applying the rubber dam to roots. Mr. Herbst stuck sharp needles in the cementum around the root, and pulling the rubber dam over, thus kept it in place, but he had not tried it. For fixing crowns a mixture of amalgam and cement was better than cement alone. The amalgam being mixed as usual, and then thoroughly mixed with the cement.

He thought that the best method of fastening the edges of the collar together, was to fuse them together without solder.

Mr. Farmer said that the best method was to make the whole crown at one visit. He generally killed the nerve by driving a piece of hickory wood up the canal, and very seldom had any trouble after. When the nerve was not quite healthy or even if it was, he thought the better method was to devitalize it, for very often trouble occurred after crowning a tooth with a live nerve.

The President proposed a vote of thanks to Mr. W. R. Read and those gentlemen who had brought forward Casual Communications.

The meeting then terminated.

Dental News.

APPOINTMENTS.

Henry Davis, M.R.C.S ; L.S.A., appointed Anæsthetist to the Dental Hospital of London.

William Rushton, L.D.S. Eng., appointed Dental Surgeon to the National Dental Hospital.

Herbert J. Relph, L.D.S. Eng. appointed Assistant Dental Surgeon to the National Dental Hospital.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

SIR,—I notice in your issue of July 15, a paragraph anent the appointment of dentist by the Beverley Guardians. Will you permit me to give you the true facts of the case. About two months ago I was requested by the Clerk to the Board, to examine the children at the Union. At the next meeting of the Board that report was read and also a letter from

me, stating that I should be prepared to look after the children's welfare, and I named the sum of £10 per year. The Guardians thought I had named too high a fee, and a resolution was carried offering me the post at £5 per year. In reply to the letter from the Clerk, I sent a letter, a copy of which I enclose. I may say that prior to the sending of my letter naming the sum of £10, I consulted the majority of the Medical men in the town, and they were all of opinion that the sum named by me, was very reasonable. Well, the Guardians refused to entertain my offer, as they thought it too high, and they ordered the Master of the Union to make inquiries, and it appears that Mr. Wallis took the appointment; whether he took the precaution of consulting the Medical men, I cannot say, but on the evening of the day the appointment was made, a prominent Medical man observed to me, "I don't pity you, but Mr. Wallis is to be consoled with." The Guardians may be found fault with for offering a cheap Jack's fee, but I fancy when this is read you will agree they are not the only ones open to censure.

Yours truly,

T. J. WILLIS.

10, North Bar Without, Beverley, and
1, Storey Street, Hull.

The following letter was read at the meeting of the Board of Guardians.

10, North Bar Without, Beverley,

June 3rd, 1896.

DEAR SIR,—I beg to acknowledge the receipt of yours dated the 2nd of June, and in reply request that you will be good enough to inform the Guardians that I am unable to accept their offer of £5 per year, a sum which represents less than two shillings per week. I may say without any disrespect to the Guardians, that I shall be rather surprised if they find any professional man who would accept the position at the sum offered. Of course if the Institution over which the Guardians preside came under the designation of a charity, I should have had much pleasure in placing my services at their disposal without fee or reward of any description, but I am advised that it does not do so, and therefore to accept the amount offered as remuneration for my services cannot be entertained.

Yours truly,

T. J. WILLIS.

C. W. HOBSON, Esq., Clerk.

To the Editor of the "British Journal of Dental Science."

Sir,—In your Editorial notes published in the Journal on the 15th inst., you state that I have been appointed to attend to the teeth of the *paupers* of the Beverley Union, and then proceed to give it as your opinion "that the honorarium of £5 per annum is a miserably inadequate

one, if Mr. Wallis is to devote a fair proportion of his time to his duties at the Workhouse."

Your statements are altogether inaccurate and misleading. I have not been appointed to attend to the teeth of the *paupers* of the Union, but only to the *children*, who average in number about 15, and my duties are to give 3 or 4 periodic inspections of their teeth yearly, and do any extractions necessary. Beyond this, all dental work required would be paid for extra.

Yours, etc.,

JOHN G. WALLIS.

33, Albion Street,
Hull. July, 24th, 1896.

* * * We are glad to publish Mr. Wallis' letter. He may consider himself well paid when receiving £5 for 3 or 4 inspections of 15 pauper children's mouths, and the necessary extractions. We should, however, be more satisfied if in his last sentence he had written "will" instead of "would." If these pauper children are like others, and the fee for the time expended on the necessary stoppings is in the same proportion as for that required in inspection and extractions, the appointment will be a valuable one.—Ed. B.J.D.S.

To the Editor of the "British Journal of Dental Science."

Sir,—Noticing an editorial in the 1st May issue of your valuable Journal, entitled, "A Bridge Work correspondence," I thought it just as well as a bridge-worker, to draw the attention of the profession to the fact that a system such as Mr. Comer has adopted, is described in Evans' Bridge Work, page 239, where you will find woodcuts of such bridges.

The system is called "Dr. Winder's Sectional Crown Method," and I clip the following description for the benefit of those who have not the work mentioned at hand.

"The collar section of the Artificial Crown, is capped and cemented on the natural crown or root, the gold forming the occluding portion of the crown, when the bridge is adjusted in position, being secured with a screw. The screw may be made to enter the body of the crown, or it may be soldered to the cap on the collar, passing through the occluding section of crown, and being secured by *nuts on the screws*."

From the above, you will see that Mr. F. Comer has no right to pose as the inventor of the system in any shape or form, the only original idea in the Comer? system being the supplying of duplicate sets and key at to my mind, extravagant prices. Mr. C. Tomes is perfectly right when he states that there is no very great difficulty in making such bridges.

Apologizing for trespassing on your valuable space,

I remain, yours faithfully,

A. FIRTH.

PROSECUTIONS UNDER THE DENTISTS' ACT AT CARDIFF.

At Cardiff First Police-court on Tuesday morning, the stipendiary (Mr. T. W. Lewis), had further cases brought before his notice arising from prosecutions taken out under the Dentists' Act of 1878. The first defendant was Templar Malins, of Woodville Road, Cardiff, who was represented by Mr. Alfred Jackson. Mr. T. H. Belcher appeared on behalf of the British Dental Association to prosecute, and stated that the proceedings were taken out under Section 3 of the Act, which forbade any person to take an addition or description implying that he was registered under the Act, or specially qualified to practise dentistry. Defendant carried on business as a chemist at 107, Woodville Road, and outside his shop he had placarded the words, "Popular Dentistry." A member of the Dental Association had gone to the shop and had been given a card bearing defendant's charges for extracting teeth with or without gas. The facts were admitted by the defence, and in mitigation, Mr. Jackson urged that there was no desire on the part of Malins to make his clients believe that he was a fully-qualified dentist. Defendant was fined £5 and costs, or in default one month's imprisonment.

ANOTHER CONVICTION.

A similar case was proved against G. F. Bamber, of Castle Road, for whom Mr. Lewis Morgan appeared, the prosecution again being conducted by Mr. Belcher. The circumstances of the case were that outside the defendant's house a case of teeth was exhibited, and on the railings these words—"Bamber. Teeth extracted. Prize medal artificial teeth." Defendant also distributed cards which bore statements to the effect that he was specially qualified to practice dentistry. A fine of £20 and costs, with an alternative term of imprisonment of two months, was imposed, this being defendant's second offence, he having been previously convicted for an infringement of the Act at Barrow-in-Furness.

British Journal of Dental Science.

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ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 633.)

CANCER OF THE TONGUE.

Sarcoma of the tongue is such a rare disease that it is only necessary to mention that a few cases have been recorded. Carcinoma, on the other hand, is of very common occurrence. It is remarkable that only one variety of carcinoma (viz. the squamous-celled epithelioma) affects the tongue. Any part of the tongue may be affected, but it is more common on the anterior half than the posterior and on the edges than on the dorsum.

The essential *cause* of cancer of the tongue is, like that of other tumours, still unknown, but the conditions which favour its growth and development are more evident in the tongue than in any other part of the body.

Age has a most important influence. The disease is almost unknown before the age of thirty; the great majority of cases occur between forty and sixty.

Males are much more liable to the disease than females, the proportion being as great as six or seven to one. This

is probably due to the greater prevalence of smoking, spirit-drinking and syphilitic affections of the tongue in the male sex.

The influence of inheritance as a predisposing cause of cancer has been exaggerated in past years, sufficient allowance not having been made for the effects of similar conditions affecting both parent and offspring.

Smoking and tobacco chewing have no direct effect in producing cancer, but if they cause soreness or excoriation of the tongue they do to a certain extent act as predisposing causes. Cancer much more often affects a tongue which has been the seat of previous disease than a healthy one. Such conditions as leucoma, fissures, ulcers and scars, whether syphilitic or not, are well-known precursors of cancer, especially when they have been repeatedly irritated by caustics, or other unsuitable remedies. Carious teeth, badly-fitting dentures, highly seasoned food, strong drinks, the rough stem of a tobacco pipe may all cause sore places on the tongue, and so act as predisposing causes of cancer.

Cancer of the tongue may *commence* in various ways; the first evidence of disease may be a blister, an excoriation, an ulcer, a fissure, a papule, a wart, or a lump. This variability is not due to any inherent mutability such as one sees in syphilitic affections, but to the number of different conditions upon which cancer may become engrafted.

A blister or papule very soon becomes a small excoriation or ulcer, so one description will suffice for the five first conditions mentioned above. It is but rarely that the first commencement as a blister or papule is seen, so soon do they become ulcerated. The ulcer thus formed is usually chronic and indolent, discharging but little, causing little, or no pain, and showing no tendency to change; if on the border of the tongue, it stands out on a slightly raised base. As the result of continued irritation the ulcer slowly enlarges, or the fissure

becomes deeper. The surrounding area becomes a little angry and the base of the ulcer imperceptibly harder ; the advent of induration is a most important feature and may be taken to indicate that the sore has become cancerous.

Small warty growths with well marked pedicles in young persons are of very little importance, but dense hard warty lumps in older subjects especially when found on a leucomatous tongue, are very liable to become cancerous. This unfavourable change is indicated by the growth becoming larger and firmer, and by the surrounding area becoming indurated; ulceration soon occurs.

The least frequent way in which cancer begins is as a small lump or nodule in the deeper part of the mucous membrane. Such a lump is probably cancerous from the first. It slowly enlarges and projects upon the surface of the tongue and breaks, giving rise to a foul sore with everted edges, or allowing a fungous mass to protrude.

The *objective characters* of the fully developed disease are very striking, although differing considerably in different cases. Sometimes it forms a large prominent mass composed of several red raw tubers growing from a constricted base and surrounding a central depression occupied by a dark greenish-grey slough resembling "the unfolding of some hideous flower, with its red and fleshy petals turned back, and a horrible mass of corruption hiding its pistil and stamens." Sometimes one half of the tongue is transformed into a raised warty and granular mass of irregular form covered here and there with sloughs or coagulated pus, and broken by deep and irregular fissures. Sometimes the disease forms an oval ulcer devoid of granulations, but with a smooth glazed surface and its central part depressed. Occasionally the whole tongue is transformed into a hard inelastic substance like a piece of wood. Although ulceration occurs early as a rule, and is a characteristic feature, it is sometimes absent in cases

of warty epithelioma, the growth resembling a simple papilloma, but for its indurated base. A common form for the disease to assume is that of a deep foul excavation with raised everted nodular edges, and a surface covered with slough, pus and decomposing food. The glands beneath the jaw are early involved and assume the hard fixed character already described when speaking of epithelioma of the jaws.

The chief *subjective symptoms* are pain and salivation. Pain is often present from the first, it may be lancinating, aching or gnawing, and frequently radiates to surrounding parts, especially the ear. In some cases the pain is so slight that patients do not seek advice until the disease has assumed very serious proportions. Pain is of course increased by taking food and by mastication. Salivation is not usually a source of much trouble until the disease is far advanced, but in the later stages it is very distressing, and greatly aggravates the patient's sufferings.

The *course* the disease pursues depends to a large extent upon its position. If situated on the border of the tongue, it tends to infiltrate the floor of the mouth, and extend to the mandible. The tongue becomes fixed in the mouth and can no longer be protruded. When the disease commences at the back of the tongue, it spreads to the epiglottis and even the larynx, or involves the arches of the palate and tonsil. The spread of the disease to neighbouring parts renders speech and swallowing difficult and painful. When the tongue is fixed to the floor of the mouth and there is much salivation, it is sometimes impossible to understand what the patient says. Fluids and soft solids can be fairly easily swallowed, but food which requires masticating and collecting from between the teeth is a source of great trouble.

The majority of patients die of exhaustion brought on by hæmorrhage, pain, salivation, inability to take sufficient food

suppuration, and want of sleep. The fatal result is often determined by the onset of septic pneumonia.

The *duration* of the disease in unoperated cases is about eighteen months from the onset but many cases die within a year.

The *diagnosis* of cancer of the tongue in its advanced stage is usually a matter of no difficulty, but in its early stage it is often well nigh impossible to differentiate it from syphilitic affections; tubercular ulcers, innocent papillomata, and simple ulcers and fissures, and the difficulty is increased by the fact that several of these conditions may be transformed into cancer by almost imperceptible gradations.

The diagnosis of a primary sore upon the tongue has already been dealt with. Secondary syphilitic affections are scarcely ever mistaken for cancer, but in the tertiary stage mistakes are easily made. An unbroken gumma may be mistaken for that sort of cancer which commences as a lump or nodule in the deeper parts of the mucous membrane. The resemblance between the two conditions may sometimes be so close as to render diagnosis impossible; both occur for the most part on the dorsum, in both cases the lump is at first ill-defined, firm and intimately associated with the tissues of the tongue, in both the progress of the disease is at first slow, and there is no affection of the glands. On the other hand gummata may be multiple, whereas carcinoma is nearly always single. A history of syphilis may be obtained, or there may be scars or other signs of previous syphilitic disease, but too much weight must not be attached to them, as cancer may occur in old syphilitic tongues. In these cases the effect of treatment by large doses of iodide of potassium may clear up the diagnosis. Gummata may also be mistaken for cancer when they have become ulcerated. In making the diagnosis the following points must be borne in mind; gummata frequent the central portion of the

tongue, cancer chiefly the borders ; the edges of the gummatous ulcer are usually undermined, those of cancerous ulcers are raised, nodular and hard ; gummatous ulcers are often multiple and are rarely so deeply or so widely indurated as cancer ; the lymphatic glands are scarcely ever affected in tertiary syphilis, whereas they are almost always involved in cancerous ulcers of any duration. The effect of antisypilitic treatment may clear up the diagnosis, but on the other hand, it may lead to a waste of valuable time ; it should therefore only be employed in quite early cases. A microscopic examination of a scraping from the surface of the ulcer may afford valuable information. (See page 632.)

The diagnosis between tubercle and cancer is often a matter of great difficulty. The same situation is common to both, both may have their origin in an injury, and in both there may be lymphatic enlargement. In typical cases the absence of decided induration, the sodden condition of the adjacent portions of the tongue, the pale pink colour of the surface of the ulcer, the presence of caseous material, and the small yellow tubercles in the surrounding mucous membrane serve to distinguish a tubercular ulcer. Tuberculous ulcers often appear in subjects who are too young for cancer and in whom there are other signs of tuberculosis. The differential diagnosis between these two conditions is not a matter of very great importance, as the treatment is the same in both, viz., excision.

In distinguishing between a simple and a cancerous wart, most reliance must be placed upon the presence or absence of fixation, induration and ulceration, and it must be borne in mind that a simple wart may become cancerous. The examination of a scraping from a warty growth is of no value unless the surface is ulcerated.

The diagnosis between a simple ulcer and a cancerous ulcer has already been discussed (p. 631).

The *treatment* of cancer of the tongue [comprises the treatment of pre-cancerous conditions as well as that of the fully developed disease ; indeed the former is much more important than the latter, for although cancer can nearly always be prevented by timely and judicious treatment of innocent sores, it is but rarely that the fully developed disease can be permanently cured. All indolent ulcers and warty growths in persons over thirty, must be dealt with by remedies most likely to effect a cure, and they must be most carefully guarded from every source of irritation. Rough or carious teeth and badly fitting dentures must be efficiently treated by the dentist. Smoking, tobacco chewing, strong wine and spirits must be given up, the food must be neither very hot nor very cold, neither very sour nor very sweet, and not highly spiced. All applications to the sore place must be unirritating, and caustics must be religiously avoided. If under careful treatment an indolent sore or wart does not show marked signs of improvement in a fortnight or three weeks, it should be cut out. The operation is a trivial one, as it is only necessary to remove the disease and a small surrounding area of healthy tissue. In many cases it may prove the means of saving the patient from the horrors of death from lingual cancer.

The operative treatment of actual cancer of the tongue is not attended with good results, and this is chiefly due to the operation being so often postponed until the disease has become so extensive that it cannot be thoroughly removed. It is estimated that only about 10 per cent of patients operated on for cancer are permanently cured, and that in cases in which a cure is not effected, the duration of life is increased six or eight months. It should, however, be added that even though death is the ultimate result, the sufferings of the patient are much less when it is brought about by a recurrence of the disease in the glands of the neck, than when it

is due to a continuance of the growth in the mouth. The mortality directly due to the operation is rather over 10 per cent.

As a general rule unless the disease can be very fully and freely extirpated, it is better not to operate, for the tendency to recurrence *in situ* is very great. When the disease has extended to the floor of the mouth, the mandible, the arches of the palate, the tonsil, or has largely infiltrated the glands of the neck, the advisability of operating is doubtful. In determining the question much will depend upon the general condition of the patient.

The tongue may be removed either wholly or in part by the following methods :

(1) From within the mouth, without external incision.

(a) by ecraseur. (Morrant Baker).

(b) by scissors (Whitehead).

(2) From within the mouth, the cheek being divided on the same side as the disease (Furieux Jordan).

(3) Through the mylo-hyoid space (Regnoli).

(4) By division of lower lip and jaw. (Syme).

(5) Through submaxillary region. (Kocher).

For the details of these operations, and the various conditions for which they are suited, a work on Operative Surgery should be consulted.

(To be continued.)

REJECTED BECAUSE OF A FALSE TOOTH.—Quite lately a young fellow, otherwise qualified, failed to pass into Sandhurst on account of one false tooth. Had the decayed tooth been left in its place, or even had it been stopped, it would not have mattered ; but the fact of possessing one “not grown on the premises” disqualified him for the service.—*Edinburgh Evening News.*

HOBBIES—DENTAL AND OTHERWISE.*

By Mr. KAISER.

Mr. President and Gentlemen,—Dental Hobbies may be divided into two great classes.

1st. Those used by Dentists which are very useful when limited to certain cases.

2nd. Those used by Dentists the greater part of which are to be condemned.

I can, of course, speak of these from a student's point of view only, but if any gentleman present takes one or more of the unpleasant truths to himself, let him criticise freely, and not be afraid to uphold what he thinks to be best. Before going further, I should like to say that I have introduced a miscellaneous collection of ideas into this paper. It is rather misleading to call some of them hobbies. When a man starts dental hospital work, in a very short time he forms certain ideas which stick to him through the remainder of his professional career. If he is destined to turn out a good and conscientious student, in the choice of instruments, in filling with gold or plastics, he will choose those methods which he thinks best suited to his case. Can you point out to me two students in this hospital who use, for instance, the some kind of excavators for identical cavities? With regard to those hobbies or methods, very useful when limited to certain cases, there are a few which I would like to see performed a little more frequently. The following I would select as being advisable :—

1. Partial gold crowns for the upper incisors, upper or lower bicuspid and molars.
2. Partial crowns in porcelain for molars and bicuspid.

* Read before the Students' Society, Liverpool Dental Hospital.

3. Porcelain inlays with gold edges.
4. Permanent gutta percha in conjunction with phosphate.
5. Amalgam and phosphate combinations.
6. The more frequent use of the elevator.

With regard to the use of partial gold crowns, say a patient comes in with a badly decayed dead upper canine and wishes it filled with gold. The cavity is distal, a large portion of the labial and lingual walls are missing, the cervical edge being good however. What do the majority of students recommend? Either a post in the root, and a huge gold filling, taking something like three hours to perform, or the cutting off of the remainder of the crown, and the substitution of a porcelain one, thereby shortening the life of the rest of the tooth four or five years. Why not try a partial gold crown? If well fitted, fixed in a post in the root, and the edges sealed with permanent gutta percha, it possesses these great advantages,—

1st. It simulates very accurately a good gold filling.

2nd. The operation is short and has little expense attached to it.

3rd. It does not shorten the life of the tooth.

4th. It can be removed at any time, and a porcelain crown substituted.

The partial gold cap acts splendidly on the grinding surface of a molar with frail walls, and can be adapted in cases where filling with non-cohesive gold, tin, or even amalgam would be a very injudicious proceeding. In fixing the caps there are certain books which strongly condemn the use of permanent gutta percha on account of its liability to swell and leave a false edge. The gutta percha may be used around the edges only, the cap fixed with phosphate, and a heated burnisher passed round, whilst the phosphate is fairly soft, will insure the knife-like edge so necessary for permanency.

Partial porcelain crowns sometimes do very well. They

are best used in bicuspid and molars, where the cervical margin is well above the gum, and the remainder of the tooth sound in structure. A most accurate fit can be obtained by grinding down one of Ash's half molars or bicuspid to fit a model taken. With a little care the pins may be left to project into the pulp chamber, and may even in some cases be soldered to a pin fixed in one of the canals.

Porcelain inlays as far as appearance goes, are unapproachable when well matched in colour, but the great disadvantage is, that phosphate being the only cement which can be used for fixing, is very soluble in some saliva, and takes greatly from their permanency. I don't see why they should not be edged with gold after fixing, a space being left for the purpose. Although the gold takes from the appearance, it at least adds greatly to the permanency.

Just a few words about permanent Gutta Percha in conjunction with phosphate. There are plenty of men at the present day who greatly undervalue the permanent Gutta Percha. The colour of the material is certainly to be deplored. When shall we have it of a more natural shade? At present it looks simply frightful in the front of the mouth, but where I would advise its more frequent use is at the cervical edge, the rest of the cavity being filled with phosphate. There is no question that it adds greatly to the permanency of the phosphate.

Amalgam and Phosphate is an exceedingly useful mixture at times, and acts very well in frail or sensitive teeth, where amalgam alone would irritate or phosphate wash out. It does not take a good polish, however, and is rather awkward to manipulate on account of its stickiness.

Concerning the elevator, I think that students generally have a great objection to using it. As a certain gentleman says, "They will sniggle away for a quarter of an hour at a lower molar root with a pair of forceps, when an elevator

would dislodge it immediately." It does require a good deal of courage to go for a broken down lower wisdom with this instrument, but for some temporary teeth and lower molar stumps it is certainly invaluable.

This brings me to the second and smaller portion of dental methods, viz., those which are to be condemned.

I shall only touch on a few. They are,

Firstly. The wholesale extraction of teeth.

Secondly. Wholesale exposures in filling cavities.

Thirdly. Fancy grooves in cavities for gold.

The wholesale extraction of teeth is now, thank goodness, nearly confined to the quacks who hang on to the wrong end of the Dental Profession. A new Dental Act is the only remedy for this. The sooner it comes the better. The guinea misfit would soon die out. There are gentlemen who say that if a patient comes in for a clearance of the mouth, and artificial dentures afterwards, all teeth sound and unsound should be removed, a more lasting result being obtained. Now if in that mouth there are three or four good sound teeth, I, for one, consider it malpraxis to remove them. This is especially so when the upper canines are concerned. I think the practice of wholesale extraction cannot be too strongly condemned. Here is a case brought under my notice a little time back. Six or seven years ago a lady went to a dentist in this city (not an advertising man) to have some of her front teeth attended to. She was greatly alarmed when this same dentist advised their extraction, saying they were not worth filling. She said she would think it over, and a week or two later visited another non-advertising man who filled the teeth required, the lady having the same in her mouth to this day. Doesn't this emphasize my statement as regards the wholesale extraction of teeth?

When a cavity has to be cleared out, if there is no actual exposure at the start, it should be the operator's endeavour to

prevent such an accident happening. How many times is the excavator used as if such a thing as pulp were not within an inch or so. Vigorous cutting is all very well for the edges, but when the floor is reached, too much care cannot be exercised. In these cases I personally prefer to fill over a small portion of decay and trust secondary dentine to do the rest. There is, however, a great difference of opinion on this point, which I hope will be discussed to-night.

Here I come to the close of the first part of my paper, and I will touch on a few of the methods with which a dentist may fill up his spare time. These naturally divide themselves into two great classes, indoor and outdoor. The outdoor include golf, cricket, tennis and riding. Football and its allies cannot so well be patronised because of the liability to injuries which would incapacitate the dentist for work. Golf certainly seems to be to the fore at present. It is a most fascinating game, and there are many brilliant exponents of it attached to the Dental Profession in Liverpool. Unfortunately it is confined to the wealthier men being quite out of the question to the student minus money. What more can an enthusiast wish for than a fine day, the final stage of a handicap in which he is playing, and plenty of the fair sex looking on.

Riding and cycling, especially the former, are again confined to the richer men. I think every man fit for the exertion should have a machine. Besides plenty of fresh air, he gets change of scenery and company (peculiar to the bicycle) and can jog through a week's holiday in a most inexpensive manner. Tennis and cricket are splendid games either to watch or play. There is plenty of healthy exercise to be obtained after a day confined to the surgery, and in tennis if too tired to play, a man can greatly enjoy himself watching the various strange and weird antics indulged in by some of the players, especially the lady beginners.

The indoor methods comprise the following chiefly : Music, Chess, Billiards, and Cards.

Music.—What a tremendous amount is summed up in this one word. To performer or listener, to solo or orchestral player, at concert or opera, heavy or light, at the Music hall (this, I may say, is one of the lowest forms of music), the amount of enjoyment is unlimited. If a man has any musical talent, and can play fairly decently on any kind of instrument, besides keeping him out of mischief, he derives great benefit, and also gives much pleasure to other people. I would strongly advise every man here to cultivate his taste in this direction. It is a most elevating and engaging pastime.

“Chess,” as Steinitz, the great player, says, “is purely a battle of the reasoning qualities, both parties being placed on a perfectly equal footing at starting. It affords the widest scope for the exercise, and therefore the training of the logical as well as the imaginative faculties of the mind. Since its introduction into civilized countries, a great number of our foremost thinkers, warriors, and statesmen of different nationalities, have been attracted by its charms. Voltaire, Goethe, Mendelssohn, Frederic the Great, Napoleon I. and William I., were very fond of the game, and most of those famous men are reported to have acquired great skill as players. Moreover, the cultivation of the game seems also to exercise a direct influence on the physical condition of chess players, and the prolongation of their lives, for most of the celebrated chess masters have reached a very old age, and preserved their mental powers unimpaired, in some instances, up to their last moments. Once a beginner becomes initiated in the elements of the game, he derives an extraordinary amount of entertainment and pleasure from pursuing it, and a healthy spirit of emulation stimulates his ambition to become proficient in the noble game.” In conclusion, it is a game well worth learning, and will amply repay all trouble taken in that direction.

British Journal of Dental Science.

LONDON, AUGUST 15, 1896.

DENTISTRY IN JAPAN.

Within the last few years Japan has astonished the world by its progress. But a comparatively short time ago it was a country noted for its conservatism and exclusiveness. Our battleships demolished the latter, and the abolition of the feudal system, the foundation of representative government and the absorption of Western ideas, followed in an amazingly short space of time. Not only in internal administration and upon the battlefield and the sea has Japan shown her capacity for progress, but also in the arts and sciences. Medicine and Surgery are receiving the attention they deserve, and in these as in other things, the best examples are taken as models and are closely followed. The professors imported from England and Germany are now being replaced by native students educated in Europe, and well versed in the latest developments of Medical and Surgical Science, and it is not too much to say that the Medical faculty of the University of Tokio is as well organised and administered as those of European Universities. All this has taken place within a generation, previous to which time medicine and surgery were nothing but a mass of ignorance, superstition and quackery. Now the Schools are crowded with earnest students, eager to obtain the diploma of *Igakushi*, or "Scholar in Medical Science," and special hospitals for all branches have been instituted, among others a Dental College.

The Takayama Dental College in Tokio was founded by Dr. Takayama in 1890. He went in 1872—the year in which Japan abolished the feudal system—to the United States, where he found that the profession of dentistry was

an honoured and lucrative one. Up to this time in Japan, dentistry existed only in the crudest form, was in the hands of ignorant practitioners, and consequently was despised proportionately. Dr. Takayama, though belonging to the Japanese nobility, saw the time was past for the aristocracy to pursue nothing but a military career, and wisely resolved to take up the study of Dentistry. After seven years' work in the United States, he returned home and started in practice in Tokio. He wrote several books upon dentistry in the vernacular, and started the first dental College in Japan, which bears his name. The College began in January, 1890, with nine students and seven instructors, but could not pay its way at first, Dr. Takayama's purse being called upon to meet deficiencies. However, at last more students joined, and the Institution now seems to be a flourishing concern, having produced one hundred dentists in the last five years. This is about one third of the number of practitioners in Japan. The College has a library and reading-room, a fully equipped laboratory, and an operating room. There are also dormitories attached to the school. The course of study is a three years' curriculum, the object of the College being "to give a thorough education in dental surgery, including the physical and natural sciences. It aims at educating young men to be perfect dentists in the best modern methods."

The first year's curriculum consists of Chemistry, Physics, Anatomy, Physiology, and Mechanical Dentistry. The second year the student is instructed in Materia Medica, Mechanical Dentistry, Dental Pathology and Surgery, Operative Dentistry, Metallurgy, Laboratory work and Bacteriology. The third year's work consists of Materia Medica, Dental Surgery, Microscopical Examinations, Clinical Dentistry and Laboratory work. Applicants for admission must be above the age of fifteen, and must have received a liberal education. The fees and expenses of a dental education in Japan compare ludicrously with the disbursements necessary here. The entrance fee is about nine shillings, tuition fee is about seven shillings a month, laboratory fee is about half a crown a month, while board and lodging is about fifteen

shillings a month. The examination questions are very fair if somewhat elementary ; the query as to the use of "nitrate of borax," however, puzzles us. We have no doubt that as Japan has brought in so many reforms, it will find means to reform its written characters, which are taken from the clumsy Chinese model, and consume an enormous time for even the natives to master.

DENTAL LEGISLATION IN NEW SOUTH WALES.—New South Wales is in the throes of a Dentists' Act which has just passed the Second reading in the Legislative Council. As is only to be expected the friends of the Bill think it is not stringent enough, while its foes consider it unjust. It seems that those who are now under articles, will come under the scope of the Bill and will be required to pass an examination, while those who are at present in practice will be exempt from examination, but will require to be registered. As in our own case, it is to be feared that many chemists, herbalists, etc., who have never practised any branch of dentistry, with the exception of tooth extraction, will get upon the register, but we hope that the legislature of the colony will take warning by our experience and only admit those who have been in *bona fide* practice. If necessary all candidates should be required to show a certain amount of knowledge and skill before being allowed to be registered, the registration being for the welfare of the public.

CLASS LEGISLATION.—Of course the usual cry of class legislation is raised by those who consider their own interests endangered, but the legislature should be strong enough to resist such a cry, and only consider the well-being of the public, whose servants they are. If an article in the *Sydney Daily Telegraph* is to be believed—and we see no cause to doubt it—the sooner an Act is passed the better. It says : "There are few countries under the sun, and civilized, where

medical charlatanism and surgical mountebankery have had such a good time as in New South Wales. While the sham doctor has the good luck not to kill his patients under such circumstances as to attract public attention, he is permitted to trifle with lives and limbs unquestioned. So this city has become a place of refuge for faith healers, herb gatherers, miraculous curers, and all shades and varieties of persons who traffic on human suffering and human ignorance."

THE SCIENCE OF DENTOLOGY.—The Phrenologist is able to tell us our character by the "bumps" of our cranium, the cheiromancer will enlighten us as to our disposition, and hint darkly at our future by reading the hand, the graphologist can supply us with similar and equally trustworthy information by inspecting our handwriting, but the latest addition to these mysterious scientists is the "dentologist." This learned being reads the innermost man, by examining his teeth. The subject may ostensibly wear the white flower of a blameless life, but the dentologist, like the Röntgen rays, sees beneath the surface, and marks him down as ferocious or depraved. He at least cannot be deceived. Francois Goulet, a native of Marseilles, fell in love with a young Parisian, Mdle. Jeanne Biais, but her parents would not accept him as a suitor until he had been inspected by the dentologist. The latter finding M. Goulet's teeth sharply pointed, reported that he must be of a debased and ferocious character. The match was accordingly broken off, and the rejected suitor is bringing an action against the scientist for defamation of character. We wonder if the latter will swell the list of "Martyrs to Science."

NEWSPAPER SCIENCE AGAIN.—*Science Siftings* asks "Why are transplanted teeth better than teeth which have grown in the ordinary way?" It is indeed a hard question to answer as the assumption is contrary to fact, but it is

replied to by a correspondent who quotes a case in which two upper lateral incisors were removed by Mr. Scott Thomson from a boy, and implanted in the sockets of two similar teeth removed from his mother. These teeth it seems, on the authority of Mr. Scott Thomson, are still *in situ*, after a lapse of twenty years, and although somewhat loose, are in as good a condition as the rest of her teeth. To answer the question satisfactorily it ought to be shown that they are in better condition than her own.

ABBREVIATED TITLES.—Abbreviations of all sorts seem to be becoming more and more prevalent. We do not talk of a bicycle but a "bike," a mackintosh becomes a "mack," and we have heard an enthusiastic grower of chrysanthemums talk of his "mums." "Dems" and "Regs" are also in vogue with Dental Students. But an American dental contemporary thinks that the line should be drawn at the word Doctor. Evidently some of our American cousins shorten the word to "Doc," when addressing a medical or dental friend with whom they are on friendly terms. With us, even to address a man as "Doctor," without adding his surname is considered "bad form," though it is not so considered on the other side. But when the Doctor is curtailed to "Doc" (we refrain from making an obvious pun), we think that no self-respecting professional man would submit to it. As our contemporary says, when a man is among a set who hail him in that fashion, it will not be long before he has to "leave the town."

WHEN DOCTORS DIFFER!—In a recent number of the *International Dental Journal*, a paper by Dr. Standish remarks that of all lights for the dentist to work by, the electric arc light is the very worst. In the same number of the *Journal*, W. H. Rollins says, "The arc light is the best artificial light for the mouth, and even in good daylight it

improves the seeing in filling difficult cavities. The cut, which is taken from a photograph, shows a good way to arrange this light, as is proved by my having used this apparatus without change for three years."

ANOTHER INSTANCE.—One experimentalist in cataphoresis not only obtains perfect obtunding of the dentine and the pulp, but also of the gum and surrounding tissues. Another dentist finds that the dentine was insensitive to the excavator, but responded quickly to thermal change. In another part of the same journal the Editor writing upon a different theme says, "That which seems to be most needed is that greater care should be taken in our experimental work, so that it shall be nearly free from inaccuracies, and thus avoid, as much as possible, immature conclusions, especially where they conflict with established clinical experience."

Review.

Extraction of Teeth. By J. F. Colyer, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon and Lecturer on Dental Surgery to Charing Cross Hospital; Assistant Dental Surgeon to the Dental Hospital of London. London, Claudius Ash & Sons, Limited. 1896.

The subject of tooth extraction forms an integral part of any work upon Dental Surgery, and as this book seems to be to a large extent a reprint from such a work, a detailed description of its contents is not called for. Suffice it to say that, for any person requiring instruction in this branch of our art, this book ought to be of service—as much as a book can—and would repay careful perusal. The chapters upon anæsthetics and upon difficulties are a welcome feature, and the type is excellent, and the woodcuts though familiar are useful.

Abstracts of British & Foreign Journals.

MEDICINE AND PHARMACY IN CHINA.

In many Buddhist monasteries in China the science of medicine is taught to those who wish to dedicate themselves to its practice, and some of these establishments are, either directly or indirectly, under Imperial patronage. There are some extremely well-endowed monasteries, which, in addition to the fat incomes they enjoy, are the possessors of libraries of medical literature, consisting of more than 40,000 volumes; but the teaching given is of the poorest and most deficient description one can well imagine. Official protection exists only in name, and the exercise of the medical and pharmaceutical professions is entirely free. Any individual becoming tired of his proper calling, be it labourer or cobbler, can soon become a doctor if he has a wish to do so, and to attain his object must first enter one of these monasteries, where he is allowed to copy out certain volumes of medical books, particularly such as treat of the pulse and of herbal remedies. Afterwards, without any other instruction or information than what he has derived from these books, he is a fully fledged medical man, ready to practise, and when he wishes to do so he locates himself in some central position, at a street corner, in a square or market, or any spot where there is plenty of traffic and people passing to and fro, there to wait consultations. But in order that a consultation should bear fruit, our improvised doctor must give an air of mystery to his acts and words. With this in view, he procures a small bird about the size of a sparrow, which he trains to draw a little folded paper from a tin box. This paper has written on it, in Chinese characters, the number of a certain paragraph in his dictionary of medicine, which is thereupon turned to, and such remedies as are therein mentioned are applied to the patient, whether they are appropriate or not. The bird, when its duty is accomplished, is regaled with a grain of rice, and hops back into its cage. Before proceeding to specify the remedies to the patient, the doctor feels his client's pulse, and whilst noting its peculiarities discourses learnedly on the infirmities from which the sick man's ancestors suffered, which he pretends are revealed to him by

the pulsations. The advice and remedies having been given the consultation is paid for at the rate of ten or a dozen "cash." If the doctor succeeds in making a name for himself in this fashion, which in China is not difficult, he stops his street practice and establishes himself in a house, whereupon the fees increase in amount until, if he be very fortunate, he may even receive one or two dollars for each, or about 1600 to 2000 in cash. In China a doctor's fame is measured not by his numerous *clientele*, or by his learning, but by the number of sick persons who have died under his treatment; and whenever a patient dies in his hands the authorities place a small lantern by night over the doctor's door, so that the public may know of his want of success. To lend an air of wisdom and gravity to their appearance, Chinese doctors wear large spectacles with gold or silver mounts, and with smoked glasses; they clothe themselves with brown or yellow silk garments, and for head-gear adopt a sort of black biretta, shaped like a Grecian helmet, and topped with a red ball the size of a walnut.

They wear the Chinese shoe, more or less artistically worked according to lucrativeness of their practice. A long pigtail is by them regarded as a sign of distinction and well-being, so that they all have this adornment carefully plaited and dressed; but if this, by reason of its scantiness, does not lend the requisite tone to their presence, they increase its length artificially until it meets with their approval. During the time the medical apprentice remains in the monastery, his tonsured masters, the monks, feed him upon boiled rice, vegetables, and tea, so that by simplicity of diet he may become impressed with the small amount of food really necessary to bodily well-being. By this means he is so imbued with the monkish ideas concerning medicine, that on his setting up in practice he tells his clients that the origin of all suffering are the good or bad spirits, cold, heat, hunger, or abundance. Medical schools on the European system have been established by the English Protestant missionaries in various parts of the Chinese Empire, but their halls are nearly deserted, for the Chinese say that European doctors' science consists simply in the use of the knife—an instrument for which the Chinese have an ineradicable horror.

Pharmaceutical Journal.

A "CHIEL" ON LONDON MEDICAL STUDENTS.

It is sometimes interesting to learn what others think of us ; more often it is amusing, and the latter feeling will be the predominant one among medical students in London who have been made the subject of a critical description by the London correspondent of the *New York Sun*. Everyone on this side of the Atlantic knows that America out-distances everybody and everything in "this best of all possible worlds"; at least, it is customary to believe that this is the case because we are told so—by Americans. Hence it is not surprising to learn that, in common with everything else in this country, the London medical students hopelessly and deplorably form one more illustration of the incapacity of all things English. The choice criticism to which we refer is as follows :—"The ignorance and unskilfulness of the average English practitioner as turned out of the Medical Colleges are something appalling. I have attended two or three clinics in the principal London hospitals for the purpose of comparing them, from a layman's point of view, with Bellevue, the Massachusetts General, and other American institutions. The methods of instructing the students are, of course, practically the same in both countries. What most impressed me was the low grade of intelligence, the dense stupidity, in fact, of many of the young men to whose care the ills of humanity in these islands were about to be confided. I have in mind, particularly, a class of young men about to pass their final examinations previous to beginning practice. I watched them undertake, one by one, to diagnose a long series of cases in the out-patient department of a great hospital. It is no self-conceit to say that with only a layman's knowledge I should have come nearer the mark in half the cases. Their book knowledge may be complete as their diplomas will certify, but the practical application of it, the native intelligence which makes it invaluable, was sadly deficient." This is all very sad—for the London medical student, but he must not be downhearted. All his fellow countrymen are in the "same box" with himself. It is quite evident that the native intelligence of English people, departed with the English emigrants who went to colonise America. Somehow, however, an English nation has still had the audacity to exist, and, among other things, with considerable presumption, young Englishmen are taught to be practitioners of

medicine and surgery. But in view of the criticism above quoted, the sooner that this system is put a stop to the better. One Englishman, it used to be said, was a match for three Frenchmen—in battle ; this saying may be varied. It will now have to be said, that one American layman knows as much as a class of English students—in medicine.

Medical Press and Circular.

ABSCESS OF THE ANTRUM.

By E. D. BROWER, D.D.S.

In my own experience, in every case of antral inflammation or abscess I have found an opening from some tooth into the antrum, and I am satisfied in my own mind that all the cases that I have had under my care have been caused by diseased teeth.

Symptoms.—There is a dull aching pain in the cheek, with heat, redness, and fulness of the soft parts externally. There may at once be purulent discharge from the nose, but the swelling of the mucous membrane soon closes the sinus. There is now throbbing pain, rigors, fever, expansion of the jaw, elevation of the malar bone, projection of the molar teeth, depression of the arch of the palate bone ; and the finger seldom fails to detect the fluctuation.

Treatment.—Here again we have a variety of opinions and some very elaborate descriptions of methods of opening into the antrum.

In all the cases that I have had there has been a sore tooth to extract. In looking over my record of cases I find I have had openings from the first bicuspid to the third molar. If there is no diseased tooth, extract the first molar. Make an opening into the antrum large enough to use a syringe freely. Syringe first with warm water.

I find in my first cases I used a solution of carbolic acid after the first cleansing with warm water, later I used listerine instead of carbolic acid. Again, the past few years I have used peroxide of hydrogen in various degrees of strength, followed by diluted listerine. I have found some

cases of recent origin where the extraction of a tooth, with one or more thorough washings, was sufficient.

In reviewing my record of cases since peroxide of hydrogen has come into general use, I find that I have used it in almost every case after syringing with warm water. There is one thing that must be observed. A free opening must always be had before using peroxide of hydrogen. If the case at hand has a copious discharge of pus the antrum should be syringed daily; but if not, I would at first see the patient twice a week, then once a week until complete recovery. In quite a number of cases that I have had the patient lived some distance in the country; I provided the patient with a syringe and a solution with instructions how to use.

The Dental Digest.

ARTIFICIAL DENTURES.

Clearness of enunciation in speech is very largely dependent upon the development of the alveolus, and this in turn depends upon the development of the teeth. No one with a narrow contracted arch, or with an undeveloped or overdeveloped alveolus, will have clear speech. When the teeth are lost, and the alveolus has been absorbed because it no longer has any function to subserve, all distinctness of articulation is lost. It then becomes the duty of the dentist to attempt the restoration, not only of the teeth, but of the alveolus also. And yet how many take this latter supplemental action into account? They use great care and exercise artistic skill in getting the artificial teeth into proper position, and perhaps carefully restore the contour of the facial muscles, but give scarce a thought to the lost lingual portions of the alveolus, upon which distinct speech depends.

The enunciation of most of the sounds of articulate speech must rely upon the ability to properly control the emission of air in the incisor region. This is accomplished by allowing the tip of the tongue just to make contact with the palatal arch immediately behind the incisor teeth. The delicacy of the adjustment of the tongue to this space makes the difference between clear and clumsy speech. If the teeth shall have been lost and the alveolus absorbed, in most cases the tongue will fall short of contact, and inability to pronounce certain

sounds will be the result. If an artificial plate is now adjusted which shall exactly restore the alveolus that was lost, and the teeth be in their proper position, perfect speech is restored. If the plate immediately back of the incisors, just where the tongue comes in contact with the arch, be too thick, the speech will be the same. If not thick enough—the most common fault—there will be a constant hissing and sibillation in articulation. The tongue does not properly close the aperture. The clearness of enunciation where an artificial denture is worn depends, very largely at least, upon the adjustment of material just where the lingual alveolar ridge existed, immediately at the base of the upper incisor teeth.

The Dental Digest,

THIRST FOR A DIPLOMA.

An insatiable thirst for diplomas seems to pervade the whole empire of Germany from the number who flock to our country to get a D.D.S. Most of them want the said diplomas in varying periods of from two weeks to six months. A public sentiment ought to prevail, to prevent such an itching for a D.D.S. As the D.D.S. does not carry the right to practise in Germany of what value is it to the holder? These easily acquired titles do not represent anything except the cost of obtaining them—and transport to and fro. When there are so many dental schools in Germany why do they not obtain these “students” and give them something for their money—in a practical way, instead of causing the flow of gold to this country. We protest against such “students” coming over here and then crying out that that they do not get what they come for, i.e., a diploma.

Germany has gone diploma mad in the D.D.S. line and she ought to have an inquiry, a jury so to speak to sit on her. What she ought to do is to make some plan of lifting up her “tooth artists” and “tooth workers” and then they would not fall such easy prey to the imagined benefits that a parchment D.D.S. would give them, our students do not go to any country for diplomas—they stay right here at home and earn them. Go thou and do likewise, unless you want

to work for a D.D.S. just as our boys do. Those other diplomas from Delavan or other sources that are not based on good hard steady work we disclaim, disown, despise and say they are worthless.

We suppose that the fall or autumn season will see the usual number of non-English speaking "students," who will want to get the usual diploma in the spring of '97 in spite of the fact that the applicant cannot understand "English as she is spoke." We do not wish to say one word against the searcher after knowledge, but we protest again that the mere searcher for a diploma ought to be discouraged on all sides and for reasons which must be plain to every intelligent reader of this journal.

The Dental Review.

SAVING TEETH.

By Dr. H. B. SMELLIE.

A young lady of about twenty-one years came to me some weeks since for consultation. On examination, I found the following conditions: Left upper lateral incisor extracted, left central pulpless, right central with two very large cavities and pulp nearly exposed, right lateral broken off half way from gum to cutting edge, and the remaining teeth, though slightly irregular were of good form and structure, with only a few small crown cavities.

Gums fine and healthy, and general health excellent.

She had been told by another dentist that the three remaining incisors could not be saved, and that as it was only a question of time when the others would ache too, she must have them extracted.

Having known me in previous years, and wishing to save her teeth, if possible, she came across the State to me.

I devitalized the right central and lateral, treated and filled the roots of all three, and ground them down to the margin of the gum. To the left central I fitted a collar crown, to which I soldered the left lateral. The right central and lateral were fitted with porcelain-faced crowns.

In the remaining teeth were placed six gold and two amalgam fillings, all small, and the teeth thoroughly cleansed and polished.

Result: Teeth preserved, facial contour retained, usefulness restored, appearance improved, and patient gratified.

Items of Interest.

WHAT IS THE BEST DAYLIGHT FOR THE DENTIST?

By Dr. STANDISH, M.D., Boston, Mass.

Now, to come back to my text, we will leave the artificial light and come back to daylight, which is the light I presume you gentlemen work by mostly. Everybody has said, because the artists say so (and I think very rightly for their purposes,) that the north light is the best light to work by, but the artist's work is such that they do not want the sun. Now, a light without sunlight lacks certain qualities. The north light softens the outlines of things, and consequently I am not at all sure that a north light is the best light for many mechanical purposes. If you get sunlight, the shadows falling from it have very much sharper edges. I do not know enough about dentistry to form an accurate idea of the light you require, but it seems to me that a south light or a west light, if properly screened, would be just as good, or even better, than a north light for your purposes. Now, there comes in right here a very important point, and that is the question how we judge distances. This is something that very few of us have ever given any thought to and it seems to be somewhat of an instinctive action. The child has to learn to judge distance, for when it first begins to observe, the things at the other end of the table seem to be within his reach until he learns by experience. We judge depths by shadows. If you have a cavity, and the light is from one side, the depth of that cavity is judged by the angle with which the light falls across the bottom of it. That is done instinctively, and it seems to me—at least from a theoretical stand-point—that you would get a sharper shadow from an extreme south or west light.

But there is another important fact that I would call your

attention to, and that is the utter disastrousness of cross lights in judging depths. If you put a patient so that the cavity into which you are looking is illuminated from two sources of light of equal strength, you would get a shadow from each side, and where they cross you would have your deepest shadow, so that that particular point would always appear to be the deepest point of the cavity. If you cannot judge depth without being obliged to look at it very closely then you are simply fatiguing your eyes. The man who attempts to do mechanical work in a cross light comes to grief. It requires much extra exertion to judge depth in a cross light, the eyes being focussed up to their utmost standard every minute, and the effect may be to ultimately cause near-sightedness. The value of the shadow in all mechanical work is something that is not thoroughly understood.

International Dental Journal.

TO MAKE A PORCELAIN INLAY.

To form a porcelain filling, take platinum plate of a gauge as thin as it is possible to use without tearing, anneal it to white heat, cool and place it over the cavity, forming a matrix by pressing it to the walls with cotton pellets, rolled hard, rubber points and burnishers, and getting the matrix well defined by burnishing it to the marginal lines and over the surface of the tooth around the cavity, the latter to stiffen it and facilitate handling. Then fill the matrix with porcelain body to match the natural tooth, and fuse. Remove the platinum, make slight retaining grooves in the body of the filling with a diamond disk, these grooves to abut as nearly as possible upon similar ones made in the side walls of the cavity. A mere scratch in labial cavities will suffice. Then dry the cavity and filling, and insert with a thin mixture of cement, cover with sandarac, and allow to set well before removing the surplus cement. Extreme care should be taken that the marginal lines should be so perfect that subsequent grinding on them will be unnecessary. In filling cervicofacial cavities, pink porcelain body can be used to take the place of gum tissue, lost through recession. In large corners and tips, oftentimes short double-heated pins should be made and used, one head in the filling, the other as an anchorage button in the cavity.

American Journal of Dental Science.

CROWNS FOR TEMPORARY TEETH.

By Dr. L. OTTOFY.

As a result of the necessity for frequent refillings, each time causing a little more pain and cutting away a little more of the tooth, and for the purpose of overcoming the many unsanitary and unwholesome practices resorted to, I have conceived the idea of saving the deciduous teeth by means of crowns and jackets,—a practice which from its simplicity, ease, and permanence is strange not to have been long since recommended. It is about a year ago that I first performed the operation, and I have since then continued it with perfect satisfaction.

For this purpose I use twenty-four or twenty-two carat gold plate, 34 guage, or platinum 38 guage. The pattern is cut out as indicated by the specimen exhibited; it is bent with pliers, pressed with the fingers around the neck of the tooth, and the edges caught with a mite of solder and cemented into place. Fortunately the deciduous teeth are generally more regular, not so closely in contact, less variable in size in different individuals, than the permanent, and are usually of a shape readily adapted for the fitting of these crowns. The articulation quickly accommodates itself to the crown by either the slight displacement of the crowned tooth or of its antagonist. So much of the work is done outside of the mouth, and when done at the chair or within view of the little patient it is a source of amusement and interest instead of dread and pain. I have some of these caps sticking in place, although the restlessness of the little patients required haste in fitting and attachment.

I have never taken kindly to the method of filling deciduous teeth by bridging the filling material across the interdental space, although I have been forced to practice it for want of any better means of retaining the fillings in place. In the case of the molars, therefore, this practise offers many advantages. Usually it is better to take an impression in wax, modelling compound, or Melotte's clay than with the Melotte outfit. Dies and counter-dies are quickly made and a cap struck up. Frequently there is no necessity of shaping the crown, as usually it is unnecessary to extend the cap down on the crown, except for a short distance. It is sufficient if it extends far enough so as to hold it in place. Its purpose is merely to serve as a pro-

tection to the underlying cement. It is remarkable with what tenacity these caps will adhere even in cases where it has been impossible to prevent the moisture from coming in contact with the cement before it has set. For these jackets or half-crowns I find pure gold most satisfactory. In the specimens shown, several methods of making them are illustrated.

Dental Cosmos.

AMALGAM *versus* GOLD.

By W. W. FREEMAN.

Without doubt, more amalgam than gold is used to-day. If all the dental offices in the land could be visited, and an honest enumeration made of the number of fillings put in the mouths of patients, the amalgam fillings would be found to outnumber those of gold. If this be the case, amalgam is a greater factor in the preservation of the teeth than gold. Whether or not these fillings are inserted in a thorough manner, is not a question for our consideration at this time. Certainly if one does indifferent and slouchy work with amalgam, his gold work will be even worse. I know that a great deal of bad work is done with amalgam, but this is owing more often to a lack of thorough preparation of the cavity and bad manipulation of the material, than to amalgam itself. It is time that the too prevalent idea that anything will do for amalgam should be abolished, and that an earnest and conscientious desire to make the best possible use of it should be created.

The chance of failure with amalgam is not yet reduced to a minimum, but the impossibility of imperfection in gold work is greater, I believe, especially with a novice, even under the most favourable circumstances.

Many failures in the use of amalgam are due to causes other than a want of skill and judgment on the part of the operator. There are many things as yet unknown concerning dental amalgams, and the explorer after truth and knowledge will here find a fruitful field for investigation. I am glad to note the fact that prominent scientific men have entered this field, and it is very probable that we shall soon know what metals, and in what proportion, shall constitute an amalgam that will enable us to avoid the "spheroidal tendency" and

overcome the "electro-chemical action," and also to produce a filling which shall, under all conditions of the oral secretions, maintain a clean and bright appearance. The average practitioner has neither the time nor the inclination, and perhaps not the talent, to deal with these problems, but at the same time he should assist, in every way possible, his more scientific brethren.

The Dental Practitioner and Advertiser.

PREGNANCY AND DENTAL CARIES.

Dental caries is a disease characterized by molecular disintegration of the normal constituents of the teeth, and is probably more liable to occur during pregnancy; it is caused by the same process which produce lactic acid, which latter in turn decalcifies the enamel and exposes the dentine. There is evidence to prove also that the saliva is more acid during the period of gestation than at other times; which, if true, is probably due to changes in the blood whereby its alkalinity is diminished. The analogy between this and the lithemic condition is striking.

It is improbable that lime salts are abstracted from the teeth to supply the needs of the growing fetus; more than enough phosphates are ingested to supply the needs of both mother and child, hence maternal teeth do not suffer from lack of nutrition; again, during gestation osteophytes are found, evidencing an excess of lime salts in the system.

Vomiting of pregnancy, while it may to some extent aid, cannot be considered a potent factor in the production of dental caries; neither can neglect of the teeth during pregnancy be proved to be more prevalent than at other times.—

Peterson.

The saving of the pulp is important. In a child having a small decay in the first permanent molar, you should never use amalgam or gold for filling. You must get the confidence of children, and learn to handle them so as to accomplish the most good, and you cannot do this with amalgam or gold. If you put in oxyphosphate till they are fourteen years of age, watching the tooth and renewing the filling as it needs it, the tooth will be perfectly preserved; if properly done, he would defy any man to find decay. Then you can commence your good work with gold.

H. J. McKellops.

TO RAISE THE STANDARD OF MEDICAL EDUCATION.

A meeting of the committee of the Association of the American Medical Colleges was recently held, and the following resolutions adopted, to present to the Association in June at San Francisco :

The committee agreed upon the following as necessary to admission to any of the seventy-one colleges forming the American Association :

English composition, in candidate's handwriting, not less than two hundred words, composition to include spelling, punctuation, paragraphing, and construction. Examination in arithmetic, algebra through quadratics, and elementary physics. Latin to the extent of one year's study as indicated by Harkness's Latin Reader.

Graduates or matriculates of reputable colleges and high schools of the first grade or normal schools established by State authority, or who have successfully passed the examination provided by the State of New York, may be exempt from the requirements named. Students deficient in one or more branches named as requirements shall have time until the beginning of the second year to make up such deficiency, provided, however, that students who fail in any two of the requirements in this second examination shall not be admitted to the second course.

A resolution was adopted to recommend to the Association that after the year 1895 no medical college shall be permitted to remain or become a member of the Association that does not provide either for a three-year course of eight months' study or a four-year course of not less than six months in each year.

A sub-committee was ordered to be appointed to prepare a curriculum of studies in the medical colleges providing for the minimum of time and lectures to be devoted to each one. This sub-committee will report to the general committee at the San Francisco convention.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

At the closing Meeting in June the President delivered his valedictory address :—

Gentlemen,—Were I to refer, as I would like to do, to the various unavoidable changes which have taken place, I should be trespassing on the province of gentlemen who will presently have something to say on this head, but at least I may be permitted to express my opinion generally, that a peculiar fitness seems to mark the various official posts as they have this night been filled, and the Society is to be heartily congratulated on a list of office bearers so well qualified to carry on its important work and make arrangements for its scientific and other requirements.

The future being thus happily provided for, it behoves me to say one word of the immediate past, and I assure you, gentlemen, my only feeling is one of gratitude for the unfailing support you have accorded to myself and my colleagues during our official year.

At the commencement of the session, I ventured to express the hope that it might be one of profit, not only to ourselves but to the profession at large, and that hope I feel bound to say has been amply realised.

At our opening meeting an animated and interesting discussion took place on "The Immediate Regulation of Misplaced Teeth," a subject opened up at the close of the previous session by a paper from Mr. Cunningham, and a communication illustrated by a series of instructive models by Mr. Spokes. The boldness of the processes suggested was somewhat alarming, more particularly the heroic measure adopted by Mr. Cunningham, of dividing the alveolus ; but much interest was aroused, and it may be encouraging to those who are now experimenting in this direction, to know that as far back as the year 1750, a somewhat similar method of treatment was largely practised by one Mons. Bourdet, of Paris, and with evident success.

Mons. Bourdet, in his work on Dental Surgery, which was published in 1786, quotes various instances of the treatment of obstinate irregularities by this method. An instrument called "The Pelican," a species of key specially adapted for

the purpose, was employed to forcibly draw the offending tooth into place. This accomplished, it was retained by ligatures until the healing process was complete. Mention is made of the free use of the file where sufficient space did not exist, but it is not clear that the file ever penetrated the alveolus. The "pelican," however, as a study of its construction shows, no doubt effected in a cruder and harsher way, a somewhat similar object to that attained by the delicate revolving saw employed by Mr. Cunningham.

It is also interesting to note that Mons. Bourdet was an advocate for the removal of the six-year-old molars, for in one case quoted by him, he tells how from a crowded mouth he removed, in spite of the remonstrances of the parents, the four first molars, only two of which were decayed, and after having watched the case for a few years, pronounced the satisfactory verdict that "Cette demoiselle a présentement les plus belles dents du monde."

Mons. Bourdet's treatise in two volumes is teeming with valuable information and interesting matter. He was a keen advocate for the replantation of teeth, and remarks quaintly, if I may venture to translate him, that a good dentist can as safely replace a tooth as a clever gardener can transplant a young tree. He takes some credit to himself for perfecting this particular operation, the origin of which, however, he points out is buried in obscurity, and quoting from the writings of one Denis Pomaret, a surgeon of Montpellier, he gives an account of the operation as it was performed more than a century before his own time.

To return then to our opening meeting, two cases in practice were brought forward, one of "Ptosis of Dental Origin," and one of "Fracture of the Maxillary Tuberosity during the Operation of Extraction." Mr. Main Nicol's clear and lucid report of these cases rendered them highly interesting, and the value of such communications cannot be overestimated. Mr. Boyd Wallis's contribution on "The Antiseptic Properties of Perchloride of Mercury," was a valuable addition to our knowledge of the properties of this drug.

If I may continue a brief and rapid *resume* of some of the subjects treated of during our session, I must not omit to mention Mr. Leonard Matheson's excellent paper dealing ably with many points in practical dental surgery, and the prolonged and healthy discussion that ensued thereon; also the friendly controversy between Dr. Miller, of Berlin, and Mr. F. J. Bennett, on "The Transparent Zone in Decay"

which occupied a portion of the same evening. I must also recall the communication from Dr. Dentz of Utrecht, entitled "An Anomaly of the First Upper Temporary Incisor and its Morphological Significance," which was read by our foreign secretary and Past President, Mr. Mummery. Some apology I feel is due to Dr. Dentz, for the subject of his communication not being discussed at the time, but the absence of the excellent illustration which is now to be found accompanying the paper in our January Transactions rendered this impossible.

Dr. Dudley Buxton's classic paper on "The Nature of Anæsthesia," comes next on our list, and it has since been reprinted in the *Lancet* by permission of the Council of this Society. I feel sure all interested in this subject will do well to take to heart two, at least, of its many practical lessons. I refer to a passage where the author says: "In general we must conclude that the action of an anæsthetic should be restricted within those clearly defined limits which involve only the higher ganglionic centres," and further, "that under no circumstances should incomplete anæsthesia be deemed sufficient for even the most trivial operation."

To Mr. Charles Tomes we are deeply indebted for three invaluable contributions. Firstly, the account of his elaborate experiments on the composition of dentine and enamel, explained by him to the Society in February. Secondly, for his "Further Experiments on the Nature of Amalgams," and thirdly, for his remarkable communication entitled "A Case of Calcification of a Widely Exposed Pulp," which was so admirably illustrated by photographs taken by Mr. Mummery.

Mr. Tomes' experiments on the chemical composition of enamel, which he has clearly proved contains practically no organic matter, are fully described in the *Journal of Physiology*, vol. xix., No. 3, for 1896, and if read in conjunction with the February number of our Transactions, some idea may be gained of the painstaking and elaborate investigations which this keen observer is pursuing. With regard to the amalgam experiments, Mr. Tomes expressed the hope that the subject might be taken up by others, and I believe I am correct in stating that several members of the Society are now engaged in carrying out experiments in this respect, on somewhat similar lines to those laid down by him.

The evolution of the mammalian dentition is a subject ever enthralling to odontologists, and this was brought before the

Society in a masterly way by Dr. Marratt Tims. The paper, which provoked an instructive discussion, in which Mr. A. Smith Woodward of the Natural History Museum and other gentlemen took part, formed the subject of a leading article in the March number of the *Journal of the British Dental Association*. The beautiful and numerous lantern slides with which Dr. Marratt Tims' paper was illustrated were prepared by our Past President, Mr. Charters White, whose skill in photo-micrography is so well known and appreciated.

Mr. A. Marmaduke Shield's paper on "A Case of Aneurism by Anastomosis, involving the Vessels of the Hard Palate," was one of extreme interest to dental surgeons, showing as it did the urgent necessity of a careful diagnosis being made of growths of a vascular nature before attempting surgical treatment. His remarks also on recurrent hæmorrhage in the mouth are worthy of careful consideration.

Amongst many communications brought forward by our indefatigable curator, Mr. Storer Bennett, perhaps the most noteworthy is his report on "A Case of a Reunited Fractured Human Tooth, with some Remarks on the Healing of Wounds of the Dental Pulp." The microscopic and other conditions of the unique specimen which suggested this communication, and which was presented to the Society in 1888 by Mr. W. E. Harding, are now beautifully illustrated in a series of photographic reproductions in our April Transactions, where they will be found of infinite value, and I may here say that during the past session a considerable outlay has been incurred by the various illustrations which have appeared from time to time. The illustrations, however, have been produced in the most perfect manner, they render the Transactions doubly valuable for reference purposes, and the Council has felt fully justified in sanctioning the necessary expenditure.

Following a wise precedent, one of our evenings was set apart for an open discussion. Mr. F. J. Colyer, who kindly undertook to open this discussion, was fortuitous in his choice of a subject, namely, "The Early Treatment of Crowded Mouths," and the lively discussion which ensued on Mr. Colyer's opening remarks is still fresh in our memories. The subject was one which will, I believe, be discussed for many years to come, even as Mons. Bourdet and his contemporaries discussed it 150 years ago, but I firmly believe that each free and full discussion brings us nearer to that time when we shall be able, more exactly than we do at present, to discriminate between those cases where nature can and nature

cannot effect the cure, and indicate the best period for the weeding process, even when that must extend to the germs of the partially formed teeth themselves. Mr. Charles A. Clark has recently exhibited to the Society photographs showing the roots of the teeth taken by means of the "X" rays. May this not show the way to a means of diagnosis in this direction?

To-night we have listened to another valuable addition to our scientific papers of the year. Dr. Washbourn has brought before us, in a most lucid and interesting manner, many points in connection with the bacteria of the mouth. To Dr. Washbourn and Mr. Goadby, with whom he has collaborated, we are much indebted. The discussion which has taken place is a better compliment than any I can offer, so I will here merely tender to these gentlemen the best thanks of the Society.

Time will not permit me to dwell upon Dr. Martin's "Prothese Immediat," exhibited and explained by Mr. Blain; Mr. George Brunton's experiments in colouring porcelain gum bodies and enamels; Mr. A. S. Underwood's and Mr. Bond's cases of nasal replacement, and many other interesting casual communications which have come before us, but this hasty *resumé* will serve to remind us of some, at least, of the various topics which have engaged our attention and served as our mental pabulum during the session that is past. Viewing them impartially, they appear, in scope and character, in all respects worthy of our Society's highest aims.

Gentlemen,—Three days ago I had determined to say nothing this evening but a word of farewell. In spite of my better self, however, I have been tempted into offering these few desultory remarks, and for their imperfections, in view of their hasty preparation, I must offer you my humble apologies. You must take them merely as an evidence of the lingering regret which attaches to the severance of pleasant ties and the relinquishing of an honourable position.

In vacating this chair I carry with me a legacy of never-to-be-forgotten memories, and the recollection of many evenings profitably spent. I have only one legacy to bequeath in return, but it is one which I feel sure you, my fellow-members, will be glad to receive. It is an ancient volume containing a copy of the invitation signed by Mr. Samuel Cartwright, Mr. John Tomes, and Mr. Thomas Arnold Rogers, and some fifty autograph letters written in response

thereto, by the early members joining this Society prior to the adoption of the election by ballot in 1856. It moreover, contains fragments of the correspondence with the Royal College of Surgeons, which led up to the foundation of the Dental Diploma. It contains also some original and amended drafts of that diploma and many other documents of historic interest. Its fitting home is the library of this Society, and in the hands of our trusty librarian, Mr. Maggs, it will be in safe keeping. It is with great pleasure that I entrust it to his care.

Having thus recalled the foundation of the Odontological Society of Great Britain, which took place forty years ago, I will express my parting wish that it may long continue to flourish and prosper.

STUDENTS' SOCIETY, LIVERPOOL DENTAL HOSPITAL.

On January 20th, 1896, a meeting of the above Society was held. The chair was taken by Mr. Rose.

Minutes were read and passed. Mr. M. M. Goldfoot was elected a member of the Society.

Mr. Phillips offered a "Heath's Diseases and Injuries of the Jaws," in place of the one inadvisedly removed from the Library. This kind offer was accepted, and it was decided in future to stamp each book with the Society's stamp.

CASUAL COMMUNICATIONS.

Mr. DORAN showed a four-rooted lower molar.

Mr. DRAKE showed a twisted and curved rooted bicuspid, and mentioned a case under his care, of a woman who had, whilst eating a hard crust, fractured the alveolus surrounding the upper central incisors. For this he made a metal splint, which slightly covered the biting edge of the adjacent teeth. This answered very well, the loosened tooth becoming quite firm.

Mr. ROBERTS showed an exceedingly long rooted canine, which supported a pivot.

Mr. WOODS exhibited two small teeth, removed from a child at birth, also two teeth removed from a nigger, the twelve year old and lower wisdom. He asserted that before the wisdom could be removed it was necessary to remove the second molar, luckily this tooth, after removal was seen to be badly decayed on distal side below gum margin. The operation took three quarters of an hour, and broke an elevator.

Mr. Rose described a somewhat similar case, where the wisdom tooth was impacted in the ascending ramus, which proved most stubborn to the forceps, but was finally extracted with a curved excavator with the greatest ease.

Mr. COUNSELL showed a model of a dark gentleman's lower jaw, where the laterals had changed places with the centrals.

Mr. KAISER was then called upon for his paper, which is published on page 729.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The annual Distribution of Prizes took place at the Royal Institute Galleries in Piccadilly, on the 24th ult. The Dean (Mr. Morton Smale) having read a Report, Sir James Crichton Browne presented the Prizes and Certificates as follows :—

Saunders Scholar, Mr. R. L. Young.

Ash's Prize, Mr. T. W. Thew.

Certificate of Honour, Mr. A. R. Heath.

WINTER SESSION, 1895-6.

Dental Mechanics—1st Prize, Mr. F. J. Padgett, Mr. R. L. Young. 2nd Prize, Mr. A. R. Heath. Certificates of Honour, Mr. T. C. Myers, Mr. P. R. Cooper, Mr. H. Dunlop, Mr. J. H. Robertson, Mr. J. C. Douglas.

Metallurgy—1st Prize, Mr. A. R. Heath. 2nd Prize, Mr. R. L. Young. Certificates of Honour, Mr. T. C. Myers, Mr. F. W. S. Metcalfe.

Operative Dental Surgery.—1st Prize, Mr. L. Young. 2nd Prize, Mr. J. Humphries. Certificate of Honour, Mr. A. R. Heath.

SUMMER SESSION, 1896.

Dental Anatomy—1st Prize, Mr. T. W. Young, Mr. A. R. Heath. 2nd Prize, Mr. R. L. Young. Certificates of Honour, Mr. T. H. Miller, Mr. H. Westron, Mr. W. James.

Dental Surgery—1st Prize, Mr. R. L. Young. 2nd Prize Mr. N. Miller. Certificates of Honour, Mr. A. Heath, Mr. T. H. Thew, Mr. E. H. J. Smart, Mr. H. Westron, Mr. E. Joseph, Mr. J. L. Roper, Mr. J. C. Douglas, Mr. W. W. James.

Students Society Prize—Mr. W. F. Forsyth, Jr.

Prize presented by the President of the Students' Society for the best Casual Communication—Mr. E. J. Padgett.

Sir James then made a characteristic speech, in the course of which he said :—

“The dental profession is an ancient and rapidly progressive one. That it is an ancient profession is undoubted, for if I recollect aright, the laws of the Twelve Tables of the 15th century before Christ, provided for the care of the teeth bound with gold, and made it lawful that the gold in this connection might be burned or buried with the body of a deceased person, and only a few years ago an Etruscan skull was found with a set of enamel teeth artificially fitted in it. That the dental profession is a progressive one, and a rapidly progressive one, cannot be doubted by anyone who has his eyes open or has any knowledge of the subject. The number of dentists has increased prodigiously, and dental aid, which was at one time restricted to the affluent, is now sought by all classes of the community. And not only is the number of dentists increasing, but their status and qualifications have advanced in a more than proportionate degree. Up to 1878 your profession was comparatively a lawless one, and was open to the just and the unjust, the competent and the incompetent, but now, although it is still impracticable to prevent the practice of dentistry by unworthy and unskilled persons, you have at any rate by your Register given the public the means of distinguishing between the white sheep and the black, and if the public still chooses to employ the black it is their affair, and they must take the consequences ; and the satisfactory reflec-

tion is that year by year, gradually, by the efflux of time, the character and position of your profession are being raised. The old school is dying out and the new school is taking its place. Now I do not mean to say anything disrespectful of the old school, for I know that it included a great number of able and accomplished men, who did admirable work in their day and generation, and helped to promote the welfare and advance the status of the profession; but I know that it embraces also a large number of imperfectly educated and empirical practitioners, and it is certainly a matter of congratulation that the younger dental practitioners who are now joining the ranks are thoroughly prepared for their work in all departments, and have a sound preliminary and scientific education. Well, now, gentlemen, for it is the students I am addressing to-night, it is for you, if you value your profession, to raise its standard more and more; it is for you to cut it adrift from trade associations, and to approximate it more and more with the medical profession, of which it is a branch. It is for you to banish quackery in all its protean forms and advertising and false pretences and unscrupulous competition from your ranks, and to cultivate that spirit of moderation and magnanimity and dignity and generosity that distinguishes a profession from a trade. Much, very much, no doubt, has already been done in this direction, and taking the recognised body of your profession in this country to-day, I would affirm that it is unsurpassed, nay, I would say it is unequalled in skill, attainments, or in probity, by the dental profession of any other country in the world. It may be admitted for the moment that our brethren in America have a certain genius for invention and contrivance, but I will not for one moment allow that we have not in England, engaged in dental work, as great mechanical skill, as much judgment, as much honesty of purpose as are to be found amongst dental practitioners in the United States of America or in any other part of the world. We, of course, welcome our brethren from America—those of them I mean who are duly qualified—and there are, no doubt, many able and conscientious men among them, and we give them a fair field and fair play, but at the same time I unhesitatingly declare that the popular notion that there is some sort of magic about “American Dentistry” is a popular myth, and the sooner it is exploded the better. It is unfortunately the fashion with us Britishers just now to depreciate ourselves and to predict the ruin of our industries,

but for my part I still believe in English brains and English hands, and am confident that—

“Nought shall make us rue,
If England to herself do rest but true.”

I still prefer an English made watch to a Swiss one, or even a Waterbury, and I trust the day will come when no patriotic Englishman will be content to walk about with American made teeth in his mouth. But in order to encounter foreign competition in dentistry as in other industries, it is essential that we should perfect our own work, and, therefore, I have said to you students a great responsibility lies with you; you are to be the gladiators to exhibit in the future your prowess in the ivory amphitheatre of the mouth, and you must diligently prepare yourselves in order that you may acquit yourselves brilliantly in that arena, and, gentlemen, these responsibilities are certain to grow, for the importance of dentistry is day by day becoming more and more recognised, and I do not hesitate to affirm that dentistry is becoming a question of national importance, and if England is to retain her place in the world, she must look to her teeth as well as her iron-clads. There is conclusive evidence, which I need not quote to you, that our teeth in these modern times are more fragile, delicate, and prone to decay than were the teeth of our ancestors a few generations ago. There is convincing evidence that dental caries is working more widespread havoc, greater ravages, than we have previously had any knowledge of, so that we must view the future with some apprehension. I do not entertain the idea that in the progress of evolution our race is destined to lose its teeth and be left with only gums; but I do believe that very serious and deplorable consequences will ensue if the teeth are neglected, and therefore I so often urge the importance of care of the teeth in the young. It is in conservative dentistry your greatest achievements in the future will take place. I admire the exquisite nicety with which you supply dental losses, but the mouth that contains artificial teeth, no matter how artistic or deceptive they may be, is but a whited sepulchre after all, and in the future I am convinced it will be your chief mission to preserve to us the teeth with which we have been endowed by Nature. I am constantly advocating in the most earnest manner the regular periodical examination of children's teeth by the dentist, and the apotheosis of the hand tooth-brush in the nursery. Every child should be sent to the dentist at least twice a year to have its teeth examined, children with delicate teeth apt to

decay, much oftener. To young people more particularly I would say—"Brush thy teeth faithfully night and morning, that their days may be long in thy head." I hold that that is an eleventh commandment, and it is also a commandment with promise. We are always hearing of model and exemplary parents, well you have an infallible test ready at hand. Look at their children's teeth. If these are regular, clean, sound, and healthy, then the encomium on the parents is well deserved; but if, on the other hand, the teeth are irregular, dirty, decayed, then the parents are imposters and have been negligent in their duty." Sir James closed his remarks with an eloquent appeal on behalf of the Rebuilding Fund.

A very enjoyable programme of music (under the direction of Mr. Herbert Shartau) and a liberal supply of refreshments, enabled the Staff of the Hospital to bring a most successful conversazione to a close.

DEATH UNDER CHLOROFORM.

Mr. E. B. Reece, the district coroner, held an inquiry at the Town-hall, Cardiff, into the circumstances attending the death of Jessie Hicks, aged 32, the wife of Mr. Wm. Thomas Hicks, chemist, of Queen-street, Cardiff, who died whilst under the influence of chloroform on Monday evening.

Mr. Wm. Thomas Hicks, the husband of the deceased, said that his wife had not enjoyed very good health of late. They had been married about ten years, and Dr. O. T. Vachell had been her medical attendant. His wife had been suffering from toothache recently. About four o'clock on Monday afternoon Dr. Vachell attended at his (witness's) private residence, 25, The Parade, and gave her chloroform so that a Mr. Pengelly could take out the stump of a tooth. Witness was not present when the chloroform was administered, but he was sent for.

Annie Howell, domestic servant to Mr. Hicks, said that she was present when the chloroform was administered.

Dr. C. T. Vachell said he had been Mrs. Hicks's medical

attendant since she was a child. Her health had never been good, and since her marriage she had almost continually been suffering from asthma, bronchitis, and neuralgia. On the 14th July he had received a communication from Mrs. Hicks asking him to attend her house to meet Mr. Pengelly, a dentist, and to administer some gas, so that she could have some teeth removed. On that occasion he administered the gas, and a tooth was extracted. Gas was administered a second time, but the second tooth broke. Gas was administered the third time to remove the unbroken stump, but the operation was not successful, and no further attempt was then made. On the following day Mrs. Hicks complained of excessive pain, and asked that a further effort should be made. On the 16th witness attended her again in company with Mr. Pengelly, and another unsuccessful attempt was made under gas to remove the stump. After this deceased complained of intense pain, and said she was not able to sleep or take food. She said she could bear it no longer, and would have something done. Mr. Pengelly declined to try any more with gas, and he asked him (Dr. Vachell) to administer chloroform. He felt that the administration of chloroform was very hazardous, but her suffering was so very great, and, also knowing her tendency to suffer from neuralgia, he thought it was necessary to run the risk. He attended her at her residence in the Parade about four o'clock on Monday afternoon, and, after taking every possible precaution, he administered chloroform. Mrs. Hicks was greatly agitated and was very nervous, but strongly wished the chloroform to be given to relieve her. She had been placed on two small tables, that being considered safer than a bed. He administered the chloroform, and she became insensible in a very short time. He then told Mr. Pengelly he might proceed with his operation. Mr. Pengelly made an attempt to remove the stump, which was not successful, and was proceeding to do more, when witness (Dr. Vachell) noticed the deceased changing colour, and he told the dentist to desist. He attempted to restore her by means of artificial respiration. At this point Mr. Hicks arrived home. He continued his efforts for two hours. Her breathing was restored intermittently for about one and a half hours. He sent to the infirmary for the house surgeon and the electric battery. Electricity was tried for a long time, and strychnine was subcutaneously injected, but all without effect. She had no disease of the heart, but had for years suffered from palpitation. He thought she died.

from failure of the heart whilst under the influence of chloroform. He had administered chloroform upon two previous occasions, and there had then been no ill effects. There is no doubt she was very much weakened by the sufferings she had undergone.

The jury returned a verdict in accordance with the medical evidence.

THE DENTAL HOSPITAL OF LONDON.

We hear the Building Fund has just received in addition in the form of a donation of £200, towards the amount being raised for purchasing a site and erecting a new Hospital.

ROYAL COLLEGE OF SURGEONS EDINBURGH.

During the July Examinations the following gentlemen passed the First Professional Examination for the License in Dental Surgery :—Thomas Percy Wolston Watt, Ceylon ; William Joseph Low ; Arthur Capper, Huyton ; Harry Eugene Field, Birkenhead ; Francis Radley King, Newcastle ; Andrew Walker Mouat, Leith ; William Black Alexander, Edinburgh ; George Hills Watson, Edinburgh ; and John Alexander Kennedy.

The following gentlemen having passed the Final Examination were admitted L.D.S. Edinburgh :—Lloyd Thomas Lavan, Jersey ; William Jones, Edinburgh ; Charles Linnaus Routledge, Exeter ; Thomas Roger Dove Walkinshaw, Newcastle ; Bernard Smith, Huyton ; Theodore Stancombe Rendall, Torquay ; William Edward Stewart, Dundee ; James Wallace Bell, Edinburgh ; Richard Mason, Edinburgh ; Alfred William Wellings, Salop ; Alexander Shennan, Houghton-le-Spring ; and Matthew Rodway Leeming, Salford.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Dear Sir,—As the writer of the original article "A Dentist among the Small-pox," I claim the right of a few words reply to the criticisms of the *British Medical Journal* and your Editorial note. That there was ample justification for an attack on the management throughout of the epidemic in Gloucester is confirmed by articles regarding the Hospital affairs in the "Hospital" Magazine. The greatest blunder in the whole case was the use and extension of the infectious diseases hospital, that lay on the level ground close to the most thickly populated parts of the city, where the winds prevailing 9 months of the year blow directly from the wards to the streets. After these crowded and inadequately furnished buildings had been under the direction of a young doctor, who was terribly overworked and supported by insufficient nurses, Dr. Brooke was placed in command, and he straightway demanded a competent matron, a properly fitted laundry, baths and bathrooms, extra nurses and porters. His experience and weight induced the authorities to grant immediately all he asked. The death rates before and after these reforms are evidence of the value and need of them.

Outside the hospital more than half the cases were being treated, and though it reflects great praise on the prudence of our leading medical men, that some refused to take or touch any cases, and others avoided them as far as possible, it left a very heavy burden on the shoulders of the younger doctors. My sample cases, and others of a like nature, I could prove up to the hilt in all their details by the sworn evidence of several responsible adults. For some time before rushing into print in the local press, I privately wrote and implored some of my medical friends to step down into the arena, and see what was being done, and what things were being left undone; but professional etiquette proved too strong. There is a time when "pro bono publico" is a higher duty than standing well with the medical profession, and the immediate effect of my public letters in increased attention to every patient, rewarded me for my personal loss of caste.

The hospitals are shortly to be burnt down and a site sufficiently far from the city across the river Severn has been chosen for the new building. A new and abundant water supply was first turned on at Gloucester last month, not a day too soon, for the liquid served out the previous week was like soup in colour and consistency. I know the doctors have had a long hard battle, and much has been laid to their charge that rightly belonged to the civic authorities and general public. That amid the stress of the conflict, some of the overworked and underpaid medical men (for the disease was, of course, among the poor chiefly) were unable to devote enough attention to every patient it was my painful duty to make known. When I found the need for any such complaint no longer necessary, I immediately withdrew from the scene, and believe that no ill-feeling remains on either side.

Yours sincerely,

CHARLES FOX.

August 1st, 1896.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of JUNE, 1896.

| | |
|---|------|
| Number of Patients attended | 984 |
| Number of Extractions | 516 |
| Number of Extractions under Anæsthetics | 196 |
| Gold Stoppings | 182 |
| Other Stoppings | 168 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 323 |
| Crowns | 15 |
| Irregularities | ... |
| Inlays | ... |
| Total | 1400 |

ERNEST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 687. LONDON, SEPT. 1, 1896. VOL. XXXIX.

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 637.)

HOW TO CONSTRUCT A PARTIAL UPPER STRENGTHENED GOLD PLATE.



Fig. 38.

After the usual zinc and lead casts are obtained, a lead pattern is moulded up and a No. 6 gold plate cut out corresponding to Fig. 38, this is swaged until it fits the model, as represented in Fig. 39. Thus the strengthener may be either

in the inferior or superior palatal aspect of the plate, in this case it is in the superior, the only advantage one gains by having it on the superior palatal aspect is that it allows of a

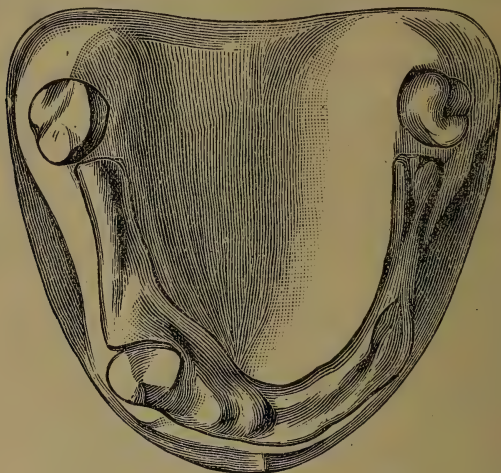


Fig. 39.

better finish to the case. The strengthener is now trimmed to size and the edges bevelled.



Fig. 40.

We now strike up the plate as represented by Fig. 40. It should be roughly got into shape, before introducing the

strengthenener, after which the two should be struck up together, until accurately adapted to the zinc model.

They may now be tried on the plaster model, and if a good fit, the next thing is to brighten the surface of the plate and strengthenener. Then paint over the opposing surfaces a thin solution of borax, and fasten the two together by means of two or three clamps. Having secured them by this means, we cut some No. 2 solder very small and place the pieces around the inferior borders of the strengthenener, then gently warm the plate over a Bunsen to fix the solder, after which it may be heated under the blowpipe until the solder melts and runs through to the superior border.

The plate may be of No. 7 guage and the strengthenener No. 6.

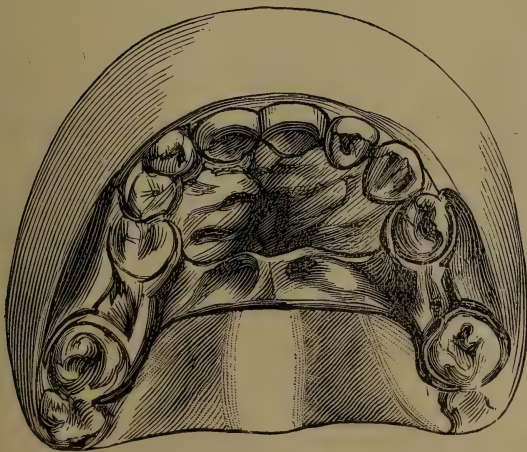


Fig. 41.

We have now to file the plate away from the teeth to allow for the clasps. In the case represented by Fig. 40 the clasps should be fitted so as to encircle the molar teeth, the division being at the distal angle of the teeth, while the clasps for the

bicuspid should extend only around the back and sides of the tooth but not to appear in front. If a plate such as this is not strengthened it should be of No. 8 guage.

There are some forms of partial cases where one can bring a narrow extension across the palate, and where a plate is indicated owing to the soundness of the teeth, a case such as represented by Fig. 41 may be worn with much comfort, as it takes up very little room in the mouth, and is out of the way of the tongue. Fig. 42 represents the same off the model.



Fig. 42.

The part crossing the palate should be strengthened, thus if the plate is No. 8 the strengtheners should be No. 6 or 7.

With a case such as this the patient should be advised to be very particular in seeing that the insides of the clasps are kept perfectly clean.

If the teeth adjoining the spaces were carious, then these cases would be very suitable for bridge-work.

To be continued.

A TOOTH POWDER.

R. Resorcin, ʒss.
Salol, ʒj.
Powdered Iris, ʒj.
Ess. Menth. Pip., m x.
Carmine, grs. vj.
Calcii Carb. Pulv., ʒij.

PULP TREATMENT AND ROOT FILLING.*

By ARTHUR P. NIXON, L.D.S. Eng.

The paper I am about to read deals exclusively with the permanent teeth, as the subject of temporary teeth will be dealt with at our next meeting.

Of the differential diagnosis and pathology of pulp disease I shall say but little, as I intend to confine myself more or less to the treatment which I myself have adopted, making brief references to the other methods employed. Much of what I advocate is old-fashioned and open to question ; and at the beginning I may say I do not claim superiority for the methods I pursue, merely I have found them of great practical use, and knowing full well that almost each of us has a different method, I look forward to a good discussion, and hope that my paper may be picked to pieces, from the very nature of the subject and the contentions that ought to ensue around a question so debateable and of such wide interest.

Let us consider the subject under the following heads :—

- A. Where the pulp is not exposed.
- B. When the pulp is exposed by traumatism or caries.
- C. When the pulp has been exposed and has died, but without periosteal complications, as space forbids me to deal with these.

A. In a simple cavity we may have to deal with *sensitive dentine*. This condition is due to some abnormal conducting power of the organic matter in the dentinal tubes. There can be no doubt that the pain transmitted varies in accordance with the local morbid condition of this organic matter, for frequently the sensitiveness disappears as excavation approaches the pulp, that is, as we come down upon healthier

* Read before the Students' Society, Liverpool Dental Hospital.

dentine, and have removed the peripheral ends of the fibres, here of a peculiarly excitable nature. The treatment is purely local, and consists in keeping the cavity dry and cutting away the carious dentine boldly and quickly ; using in preference the sharp cutting excavators to the spoons.

Further treatment may be called for, and we have several preparations which do good service.

Arsenic works like a charm, but as there is no limit to its action, it has fallen into warrantable disuse.

Strong carbolic asserts its local anæsthetic effect ; and so do all the caustics, ZnCl_2 , AgNO_3 , etc., as they act directly on the diseased organic material in the peripheral ends of the tubes. Care must be taken not to use the nitrate of silver in the front of the mouth, because of its stain.

From America we hear very favourable reports of the electro-guaiacol-cocain cataphoresis, but I have not heard of its use in this country as yet.

If there is no hyperæmia, no pulpitis, a filling can be inserted with a few precautions. It is not necessary to remove all the discoloured dentine unless it is soft and manifestly disintegrating, as it provides an efficient protection for the pulp and is far superior to any foreign body introduced.

If the cavity approaches at all near the pulp, I always make a point of covering the floor of the cavity with cement, even if there is no tenderness ; as I have had on several occasions in the past to drill out amalgams, which by their temperature conducting properties have set up chronic inflammation after being in for a fortnight or so : and after inserting a non-conducting plastic floor the symptoms have rapidly subsided.

If very near the pulp, I use a cork floor, or the oxyphosphate mixed with oil of cloves, which I flow over the floor without using any pressure.

I can speak very favourably of Fletcher's artificial dentine,

which, I believe, consists largely of the oxysulphate of zinc. If there is hyperæmia or inflammation of the pulp, temporary fillings must be inserted with some soothing applications such as creosote, oil of cloves or carbolic ; and the inflammation may be attacked by applying counter-irritation to the gum, such as lin. iodi.

Failing this the pulpitis may be so acute that it calls for more drastic measures, and the only thing left is to make an exposure, which gives instant relief.

I prefer to make the exposure either by driving a probe right into the chamber, or by using a sharp retaining drill on the engine, this causes the patient less pain than the gentle pricking for half an hour by a too-kind-hearted operator. The exposure is then treated in the following way :

B. When there is an exposure.

If the exposure is due to caries, there can be no doubt that the pulp is not normal, and the chance of failure is so great that for my own part I never 'cap' but always devitalize. Some, however, hold the opposite extreme view, and the use of arsenic has been discarded by some men of note, who preserve as much of the pulp as they can, and even when the chamber is occupied by dead pulp, they endeavour to promote the vitality of that in the canals. To my mind the risks of subsequent death and alveolar abscess are hardly counter-balanced by the questionable value of a pathological pulp. Personally I should always feel happier after a careful root-filling than after an attempt at the more conservative method.

If, however, "capping" be decided upon, carefully wash out the cavity with hot water ; as soon as the bleeding has ceased, wash out the cavity with a weak antiseptic solution, as a strong solution would further impair the vitality of the already damaged odontoblastic layer.

After drying the cavity the choice of the cap is next to be

made gold, cork, quill, decalcified bone are at our service. I think that a thin layer of decalcified bone fulfils the requirements of an ideal cap, as it can be fitted with considerable accuracy, is non-irritant, and a non-conductor. The cap is placed in position and kept there by plastic. A temporary filling is then inserted.

After deciding to remove the pulp, it may be done immediately or after devitalisation.

The *immediate* method may be called for in some cases of fracture, where a dressing cannot be inserted and retained; and it is more humane to do it with the help of nitrous oxide anæsthesia.

Another method advocated is the mummification of the pulp by the use of dried alum. I cannot see the force of it when arsenic gives such excellent results and unreasonable use leads to frequent failure.

Devitalisation. The first thing to do is to shape up the cavity so that it will retain a temporary filling, and then remove all the carious dentine around, as it is swarming with bacteria, and our chief aim must be in the direction of asepsis.

Make a free exposure, and arrest the hæmorrhage; see that the exposure is a big one, as the action of the arsenic is more vigorous, and as the pain after an arsenic dressing is often due to a minute exposure.

For devitalisation I always use the simple white arsenic, although a good plan is to use some stain, such as carmine with it. Some recommend the addition of morphia or cocaine.

Cocaine is worse than useless, because for some unexplained reason it increases the sensitiveness of the pulp.

Another drug at times incorporated with arsenic is tannin, the object of which is to harden the pulp and so to facilitate its removal. The devitalising fibre is highly recommended by those who have used it. The amount of arsenic used is about $\frac{1}{10}$ to $\frac{1}{20}$ of a grain. I moisten a little bit of bibulous

paper in an antiseptic and take up the arsenic and apply it, and I rarely find any difficulty in its application. To keep the dressing *in situ* and from leaking, any of the temporary fillings may be used, mastic in spirit, temporary gutta percha, or osteo. The mastic is objected to because of the liability of the gum to get between the pulp and the arsenic, and so render the dressing of no use. Some use a metal cap to avoid pressure, but this is so liable to be moved whilst applying gutta percha that I prefer to use gutta percha only, and bridge the exposure over with gutta percha without using any direct pressure. Should the arsenic leak the slough is scraped away and an antiseptic lotion used.

Opinion varies on the time we ought to leave the dressing in; some say 12 hours, others say 24 hours. I leave mine in for a week, giving instructions that the patient must return at once if any tenderness should arise.

Speaking broadly the arsenic causes hyperæmia, vascular dilatation, and hence thrombosis, because of the constriction at the apex.

The arsenic has different effects on some people. Cases are recorded of idiosyncrasy being so marked that from a dressing applied to a pulp, symptoms of arsenical poisoning arose. In some the pulps die without any pain, and their removal is absolutely painless. In other cases the pulp requires frequent dressings. In one patient I had occasion to devitalise three teeth. In all three, the application of arsenic was followed by periostitis, but yet the pulp was only superficially affected. The pulps required innumerable carbolic dressings to finish their career; in this case we diagnosed a large apical foramen, which would account for the periostitis due to inflammation spreading from the pulp to the periosteum, and also for slow death of the pulp from the insufficient apical constriction not causing thrombosis.

The next step is *removal* of the pulp. The chamber is

freely opened, so as to gain more or less direct access to the canals. A barbed Donaldson is passed up the apex and rotated so as to entangle the pulp, and withdrawn. If the pulp breaks up and does not come away with the reamer, cut off the communication with the nerve at the apex, and so remove the rest without pain.

After complete removal of the pulp, the use of an anti-septic is a safe precaution. I generally carry up strong carbolic to the apex on a wisp of bibulous wound on a watchmaker's broach. This arrests the lymph exudation at the apex, and the canal is then dried thoroughly with bibulous and hot air blown up the canals, and the roots are filled immediately as the roots are aseptic. Unless in the case of a pivot, I rarely use a Gates Gliddon drill to enlarge the canals, as I do not see where the advantage comes in over the use of a Donaldson, with which you can enlarge the canals ; and the presumption is if a Donaldson reaches the apex you can always fill the roots by the use of the fine watchmakers' broaches. A Donaldson is the more rational instrument, as it can readily clear out a twisted root, whereas a drill cannot pass the abrupt corner without perforating the side, and in any case the drill is not allowed near the apex, even by its most ardent admirers.

At times it may be necessary to continue the root treatment through another opening, as for instance in the case of a buccal or lingual cavity in a molar, where an opening would be made through the crown ; or of an incisor where the canal is opened from the back through the natural pit at the cingulum. In this latter instance, a point of great practical importance is to remember that the chamber is nearer the cutting edge of the tooth than your opening, and if attention is not paid to this detail and the chamber not thoroughly cleansed, an excessive and unsightly staining may result.

C. When the pulp has died.

The treatment here is to render the putrid canals aseptic.

All the carious dentine is removed, and as much of the dead material in the canals. This mechanical removal of septic organic matter is far more useful than the application of antiseptics. The frequent scraping with a Donaldson is of primary and paramount importance, and the canals are thus enlarged as the softened tissue and septic matter are removed. I think I may say I never syringe the canals, because antiseptic solutions can be safely applied on a broach, and one never can say whether the fluid may be syringed through the apical foramen and of course carrying with it septic matter, or whether it ever reaches the apex, on account of the capillary fineness of the canal. I then insert iodoform dressings, using a mixture of iodoform and oil of cinnamon, and and feel confident that iodoform is of as much use to us as it is to the general surgeon. Doubt has been thrown on its antiseptic qualities, and whilst admitting that it is not a true germicide, yet the practical results attained by its rendering innocuous the products of putrefaction place it on a level with arsenic and carbolic in the dental world. I continue the iodoform until the canals are quite sweet, and then fill.

Immediate root filling! Well, I have seen it done, and have seen the operator nearly die of fright—and that's enough for me!

Periosteal complications, with abscess, are outside the scope of this paper, and now I pass on to *root filling*.

ROOT FILLING.—This practice varies from the simpler root fillings to the elaborate ones, whether—to use an Irishism—you fill the canals with nothing or with gold. After cleansing the canals, an old method was to leave the canals empty, and the other day I was told of a root treatment, which no doubt we think crude, but which had stood the test of 20 years; the canals were empty and the chamber filled with arsenic.

The material used is more or less a detail, if in its choice, attention be paid to the following points (i) that the filling seal the canals and be incapable of being absorbed. (ii.) That it may be easily introduced, (iii.) that it shall be non-irritant and (iv.) that it will admit of removal.

I usually seal the apex as far as is possible to seal an apex with iodoform paste and fill up the canals and chambers with chloropercha, this latter I use in conjunction with a piece of silk, and if it should be necessary traction on the end of the silk will remove the whole root filling. I then cover in the chambers with oxyphosphate.

Another method I sometimes adopt is to fill up the canals and chambers with iodoform paste, which retains its healthy odour for years.

Gold, Wood, Gutta-percha and Salol, almost everything has been used ; the oxychloride is an ideal root-filling but its removal is by no means pleasant. So that I conclude that really the material used is of secondary importance, to the careful treatment and attention to minutiae beforehand.

I have on one occasion performed sponge-grafting—sponge rendered as aseptic as possible was passed up into and through a large apical foramen, it caused local irritation for 24 hours, but since it has been quite comfortable. Rhizodontrophy is our last, but useful method of keeping a root more or less comfortable, tantamount to acknowledging that we are temporising, but is the only means of dealing with some diseased roots. The operation is well known to you all and must be borne in mind as a dernier ressort.

In conclusion, gentlemen, never make any rash promises, as often the simplest thing will go wrong, and by a guarded prognosis you lose nothing.

And finally, when for some inexplicable reason, after taking the greatest care over details, perhaps an undetected excess in the number of roots, or sepsis has lurked in some inaccessible

spot, don't forget your old friend 'cold in the gums.' This explanation does no harm, and the patient has no loss of confidence in you. Beyond a possible self consciousness of swerving from strict moral lines, you may rest assured that you have done your duty. This is, I fear gentlemen, only a practical point, which when things go wrong we are all glad to fall back upon in this present age of ours, when we cannot live up to a too high ideal.

LOSS OF TWO TEETH BY A RUBBER RING.

By Dr. FLEURY, of Rennes.

Translated from "Revue Mensuelle de Stomatologie," by
WM. RUSHTON, L.D.S.Eng.

Miss X—, aged 15 years, strong, well built, and without any hereditary taint, came to Paris during last month in the following condition. Her two central incisors in the upper jaw were moved outwards, the angle of deviation from the normal being no less than forty-five degrees. The teeth were loose, painful, and half out of their sockets, the neck being 4 to 5 millimetres outside the gum. The upper lip had for a long time ceased to cover them, so that they were permanently exposed to the air. Around and above the teeth, the gum was fungous, unhealthy, and bled readily. The rest of the buccal mucous membrane was healthy, except a slight gingivitis due to tartar. The vault of the palate presented no malformation.

The lateral incisors were sound, but separated from the centrals by a space large enough on each side to admit of another tooth of the same size as the laterals. In short, there was quite a *diastema* on each side, only instead of

occurring between the canines and bicuspid, its situation was between the centrals and laterals. In the lower jaw all the teeth occupied their normal positions, and the molars articulated perfectly with their corresponding teeth in the upper jaw, but the lower incisors did not impinge on the upper ones, these latter being so far out of their normal position.

The mother, who consulted me to know if anything could be done to preserve the teeth and make them regular, gave the following details. Three years before she had taken her daughter, then twelve years old, to a dental institute of some notoriety in Paris, the object being to have the teeth regulated. At that time the four upper incisors were contiguous, and, to make space, the two upper six-year molars were extracted. From the time of this operation up to the end of September, 1895, four regulation plates were worn. I have seen the last but one. It is a platinum and vulcanite plate carrying in front two hooks to which were fixed rubber rings passing round the necks of the teeth. The mother said the three other plates were similar in manufacture and for the same purpose. On December 25th, 1895, the teeth, which had always been painful became still more so. In addition, they became longer by being forced out of their sockets ; the irregularity was much worse than it was before any treatment was begun. The girl refused to go to the institute any longer and the parents did not insist upon it. Nothing was done until March, when I was consulted.

After being furnished with all particulars, and after a close examination in conjunction with M. Vacher, chief of the dental clinic of the Hotel Dieu of Paris, we proposed to extract the two teeth in such a hopeless state, and to supply the patient with four artificial substitutes. The operation was performed, the teeth being so loose that they could have been extracted without the aid of forceps. Our surprise was great

when, as we were proceeding to syringe the alveolar cavities we perceived in the right—the end of an india rubber ring. With the aid of a pair of tweezers and a little gentle traction we recovered it entire.

The inflammatory phenomena, periostitis, and the elongation of the teeth were thus explained. The india rubber ring was the cause of all the evil. It had slipped off the hook to which it had been fixed, and encircling the right incisor had worked little by little up to the apex of the root. The inflammation had spread to the left incisor and had also involved it. The rest of our treatment was simple. The fungous patches on the gum were cauterised, and three weeks after were quite healthy. A temporary plate carrying four teeth was supplied. The girl therefore has six superior incisors, but the lips meet again now, and to the ordinary observer the aspect of the teeth would not attract attention.

MOUTH WASHES.

The following are good formulæ :—

Thymol, grs. v.

Ac. Benzoic., ʒss.

Tinct. Eucalypt., ʒiii.

Aquæ, O j.

Hydrarg. Bichlor., grs. iii.

Thymol, m iii.

Aq. Destill., O j.

To be used for 60 seconds.

Practitioner.

British Journal of Mental Science.

LONDON, SEPT. 1, 1896.

PROFESSIONAL ETHICS.

Professional Ethics may be defined as our duty to our brother practitioners, our duty to our patients, our duty to the world at large, and in addition our duty to uphold the honour and dignity of our profession. In a word it is the golden rule which sums up the whole duty of man, "Do as you would be done by."

Times change and we are obliged to change with them. That which at the present day is looked upon as unprofessional and derogatory, was not so long ago considered to be perfectly right and proper. The Sciences of Medicine and Surgery have been making rapid strides, and the men who practise these sciences, as a rule, are men of better education, wider culture, and attain a higher position in the social scale, than was the case even a generation ago. In no other profession has the advancement been more marked than in our own. As a close profession we have not yet attained our majority, yet in that time the true professional spirit has made immense strides, and those amongst us who have the welfare and progress of our profession at heart, have as strict a code of ethics as that obtaining in the sister professions. But, as in the sister professions, we have to contend against those who advertise, those who underbid their fellows, and those whose practice it is, if not openly, to run down their professional brethren, yet to convey such an impression, by the shrug of the shoulder, the elevation of the eyebrow, or by "damning with faint praise" any work but their own. Of course we are in the unsettled condition always accompanying a transition period. We have a very large number of men upon

the Register who have carried on their practice to the best of their ability and according to their lights. They naturally say "Take away our method of conducting our practice, and and you take away our livelihood." They have passed no examination, they have received no training in professional feeling or etiquette, and are content to carry on their business as their fathers before them. For these men we confess to feel a certain amount of sympathy, although of opinion that their fears are groundless, that their cutting themselves off from their professional brethren is a great loss to themselves, and that if they took a higher standpoint they would benefit themselves both morally and materially. But what shall we say of those men, who, being registered, aye, and even holding the diplomas of the Colleges of Surgeons, do all in their power to enrich themselves by trampling every professional feeling under foot, and by preying upon the gullibility of the public? It is high time these "Institutions" and "Associations" were put a stop to. The Press which is the most potent factor in the education of public opinion, is heavily subsidised in the form of advertisements by these folk, and cannot be reckoned upon (with one or two honourable exceptions) to help us fight our battle. The General Medical Council, which has succeeded in removing some offenders from the Register, seems to fight shy of big game, while the law of the land seems equally powerless. There is no doubt that the Medical and Dental Acts require thorough revision, and it is our duty to use what influence we possess to obtain this reform.

In the meantime let each of us ask himself "Am I doing all I can to live up to my code of ethics?" Do we fully realize the obligations involved in the discharge of our duties towards our patients? They cannot be expected to know what is best for them, they trust us implicitly. Let us be careful never to abuse that confidence. Do we realise our duty to our brother practitioners? We should manifest a due respect for our brethren who conduct their practice in a respectable way. We may see work done by a professional brother which perhaps does not come up to our ideal. Let

us not judge him harshly, we do not know all the factors of the case on both sides. If consulted by the patient of another practitioner, regard it as a privilege to be of service to him, not as an occasion to augment our own connection at his expense, unless of course there is grave cause for dissatisfaction. Do we realize our duty to the public at large? It is our duty—as we are the best judges—to enlighten and warn the public of the imposition perpetrated by quacks, whenever and wherever we see it. But let us be careful not to overdo it, let us temper zeal with discretion, as the public is deeply imbued with the idea of “professional jealousy.” As witnesses in any law case, let us give evidence as becomes those who recognise the trust imposed upon them by the law. Lastly towards the medical profession let us show that we are united in our aims and methods, and refuse to have any dealings with any doctor who encourages or supports any advertising quacks.

THE LONDON UNIVERSITY BILL.—This Bill, we regret to say, has been abandoned. It passed through the House of Lords without one division, and with only one serious amendment. It has been killed in the House of Commons by the Church party, Mr. Balfour surrendering to this faction, although at the head of the strongest government of modern times. It is indeed strange that while the older Universities are becoming more broad and tolerant in their religious opinions, the London University, which has been ostensibly unsectarian since its foundation, cannot become a teaching University without having tied on to it a religious test clause.

ARMY MEDICAL TITLES.—It is said that one reason why Army Medical Officers are not as popular with their combatant brethren as they might be is the fact that they have fearfully and wonderfully long titles, upon the use of which they insist in a punctilious manner. The following story, if

not true is at least amusing. A lady in India, whose baby was teething, wrote to a regimental surgeon: "Dear Dr. — please come and lance baby's gums." The doctor replied: "Brigade Surgeon-Lieutenant-Colonel— will be happy," &c. The lady replied "Dear Brigade-Surgeon-Lieutenant-Colonel — when you come to lance baby's gums, please bring your sword.'

EUCAINE.—Professor Charteris, of Glasgow University, has been making comparative experiments upon eucaine and cocaine. Watery solutions of the hydrochlorates of these salts were employed, being injected into guinea pigs. It was found that the toxic dose of eucaine per kilo body-weight was 0.09 gramme, while that of cocaine was 0.068 gramme. This proves that the toxic effect of cocaine is more powerful than that of eucaine as far as guinea pigs are concerned. The mode of death varied. With the cocaine there were more movements, more salivation, more opisthotonos, and more accelerated respirations than with eucaine. It was also noticed that the physiological action produced by eucaine did not follow nearly so rapidly as that which followed a similar dose of cocaine under the same conditions. Hence it was concluded that the action of eucaine was slower in onset and less in intensity.

EVOLUTION OF MIND.—Professor John Chiene in his address on Graduation Day at Edinburgh University touched upon the subject of the evolution of the mind and comparative psychology. He instanced the love of the dog for his master, which he maintained was not simply a question of food but of a higher and emotional feeling. He had operated on a dog for a painful disorder, and after relieving the poor beast it had licked his hand. He had heard of an English terrier who, when the pony he was left in charge of ran away, took a short cut so as to stop the animal, calculating in his mind that the pony would be sure to make for

home. He had heard of a Scottish terrier who when his master-- a student--sat up too long over his books, tugged at his clothes to make him go to bed, and finally brought his pyjamas and laid them at his feet. The following anecdote the Professor evidently did not dare to incorporate in his address, as it is placed in a footnote. "I have heard of an American terrier who, when his master was leaving home for a long journey, brought a bunch of *forget-me-nots* and laid them at his master's feet."

PRINCE BISMARCK, M.D.—The Medical Faculty of Jena has conferred the title of M.D. *honoris causa* on Prince Bismarck. We do not think there is any other honour or title left now which the Prince can obtain. Besides his many official titles and orders, both German and foreign, he holds the degrees of Doctor of Law, Doctor of Theology, and Doctor of Philosophy. His cup is indeed full.

THE ARMY MEDICAL DEPARTMENT AND THE WAR OFFICE.
—We regret to see that the attitude of the War Office towards the Army Medical Staff is not at all a cordial one. There seems to be an unreasoning and unjust prejudice in the minds of at least a section of the Combatant officers of the Service against the gentlemen who are at once officers holding Her Majesty's Commission and members of an honourable and useful profession. How Englishmen of liberal education can allow themselves to entertain such antagonistic feeling towards such a useful branch of the service passes our comprehension. But so it is, and the result is that medical men who are worth their salt will not enter the Service, and there is serious risk of our Army not only suffering from a dearth of doctors, but of having those of poor qualifications and attainments. While this feeling exists we are afraid that the question of Army dentists will be postponed to the distant future.

PHARMACY IN NEW SOUTH WALES.—In our last number we drew attention to the deplorable condition of dentistry in New South Wales. We now find that Pharmacy is as badly off. Almost anyone who wishes can go into business as a chemist and druggist. As the law stands, hospital ward men who have assisted in making up prescriptions, doctors' grooms, and sailors who have helped ship's surgeons, carry on drug stores. There is a Pharmacy Bill as well as a Dentists' Bill before the Legislature, but as the Medical Registration Bill has been repeatedly shelved, it is not likely that her humbler sisters will be treated any better just at present.

GUAIACOL AS AN ANODYNE.—M. Ferrand in the *Journal des Praticiens* speaks well of the application of compresses of guaiacol for the relief of painful points underlying the skin. The method is to wet a compress with from fifteen drops to a drachm of guaiacol, apply it to the part affected by pain and bind it on with a gauze bandage. Anæsthesia is so complete that minor surgical operations can be performed upon the part. If left too long in contact with the skin and used in very large amount, it may cause lowering of temperature and symptoms of collapse.

POOR LAW SCHOOLS COMMITTEE.—The following is an extract from the Minutes of evidence given by Dr Downes :—

“By CHAIRMAN.—

Q. 8771. You wished to make some statement to us about the medical care of the children generally, did you not? I find here you have something to say about the medical state of the children?—Yes, the ophthalmic children I have spoken of. Of course there are also besides the ophthalmic children, children who are or should be under treatment by a skilled oculist for defective vision, and so on. There are also children needing care for deafness. I think that, perhaps

more attention might be paid to deaf children. It is a serious disability to them in after years, and in many cases the deafness is curable if taken in hand in childhood. Then with regard to dentistry, some of the schools have appointed a skilled dentist, with, I think, considerable advantage, but others have not. And I am not sure that it is quite recognised that dentistry by a doctor, by my own profession, is not quite the same as dentistry by a dentist. Our dentistry is rather of a destructive character. I think the doctor is rather given to extracting than to preserving the teeth. Therefore I think that those schools who have not already appointed dentists would do well to do so. I think the number is increasing who do appoint.

“By Rev. BROOKE LAMBERT.—

8998. How far would you go as regards the appointment of specialists. You suggested that we should appoint a dentist?—Yes, I think you should have a dentist.

8999. Is there any other branch of medicine as to which you think you ought to have a specialist?—I think the aural cases could be sent for general treatment to the departments of the general hospitals, and they ought to be watched for and dealt with.

9000. And there is no need to appoint anybody else for ophthalmia cases?—For the ophthalmia cases it would be better to have them dealt with by the specialist in charge of the schools that I have suggested.”

This is no doubt the evidence alluded to in the resolution passed at the Annual Meeting of the British Dental Association. The Committee also received statistics based upon the examination of 10,000 children's mouths, and showing the prevalence of caries and the necessity of something being done.

HANDLES FOR BENCH FILES.—Dr. H. H. Sullivan, Excelsior Springs, Mo., uses ordinary corks; he says they are light and answer all purposes.

Abstracts of British & Foreign Journals.

ALUMINIUM.

By Professor BRENEMAN.

I think that until we have a cheaper method of manufacturing aluminium it cannot possibly displace the use of iron to any great extent, although there are many cases in which its lightness and its beauty, and its freedom from attack, are elements worth paying for. The production of electricity—and aluminium is manufactured by a process of electrolysis—is at best an expensive process. Even when power in such quantities as is supplied at Niagara Falls is to be had it is not procured for nothing. The great tunnel, the immense power-houses, the tremendous dynamos set up at Niagara for the making of aluminium and other things cost a great deal of money and the wear and tear is great. Besides that, the ores from which aluminium is made at present are not very abundant nor very cheap. While common clay contains aluminium in great quantities, there is at present no practical method of separating it from the clay. However cheap the raw material may become, it is unlikely that any process of working it by electricity, a process which uses carbon poles, themselves rapidly destroyed, which uses an agent requiring expensive machinery, and which makes its products by the single ton instead of by hundreds of tons, will ever be a dangerous competitor with iron manufacture. Aluminium to-day costs, by the cheapest process, about fifty cents a pound. It will be seen that the interval which separates it as a competitor from iron at a cent and a quarter a pound or less is very great.

AN OPEN LETTER.

Your first duty when you commence practice will be to determine to be conservative, equitable, pains-taking, patient, self-possessed, humane and generous—rendering service at all times and under all circumstances, commensurate with your ability to rich and poor alike.

You may vary in use of material ; it is admissible and often requisite but not your manipulative ability and skill. When a patient—even the poorest and most humble—is admitted to your operating chair to receive your professional services, you must feel it to be your duty to give him the benefit of your skill to the extent of your ability. A taxing duty often repeated and well performed will become a pleasure after a while, and not drag heavily as a tax or be regarded as loss of time, labour and material, for we will realize sooner or later there is good and possibly a blessing in the service rendered to somebody; and it is well to learn the lesson early in life that it is best not to be contracted and live alone for self. A humane service, willingly rendered, often proves a sweet and profitable privilege. Bear in mind continually that it will not do to vary skill in your manipulative service or grade your skill according to condition or grade of patient in chair. High grade of work for one class and low grade for another is unprofessional, unmanly, and unjust, and will prove hurtful to manipulative capacity and seriously detrimental to reputation as a dentist ; therefore be guarded and conscientiously strive to render like service to all. There is a *future* in practice, as well as the *present*, to be considered. The poor and unfortunate of this life must not be ignored and slighted by dentists any more than by physicians. True principle and humanity forbid. Dentistry is a profession of professed importance with extended outline, daily reaching further, and must not be wanting in sympathy, generosity and humane excellence.

Southern Dental Journal.

TO REPAIR BROKEN RUBBER PLATES.

By C. H. WEST, D.D.S., Farina, Ill.

If it be a lower plate, fill a lower impression cup with softened modelling compound and, after placing the broken parts perfectly together, carefully imbed the teeth downwards in it. With a large engine bur now cut out the crack from the inside, or maxillary side of the plate, to the teeth, and nearly to the lingual and labial surfaces. Then with a hot

spatula spread new rubber over the fresh surfaces, which will adhere to them, and the space can be thoroughly packed a little more than even with the surrounding surfaces. Now carefully run model in the plate and over the freshly packed rubber, separate the compound from teeth, bur out, pack the lingual and labial surfaces the same way, and it is all ready to flask and vulcanize, without having to open, and all of the break has been burred out and filled with fresh rubber. After vulcanizing, the surplus rubber in the maxillary groove can be cut out even with the surrounding surfaces.

Upper plates are treated on the same principle—burring out, packing the maxillary and labial surfaces before running the model, after which bur the lingual surfaces to a feather edge posteriorly from the teeth, pack rubber with a hot spatula, flask and vulcanize. This plan saves opening flasks, washing out wax, etc., and the expansion of the soft rubber during the process of vulcanizing fills every open space and makes a very satisfactory job with a very little trouble.

To replace a broken tooth or a block of teeth, cut out from the lingual surface with a file or large bur, under where the broken piece was, until the pins of the new tooth or block do not strike the plate. Fit the new piece to place, wax it up, and flask and vulcanize as above described.

The Dental Digest.

APPROXIMAL WORK—THE IMPORTANT FACTOR INVOLVED.

By Dr. L. C. F. HUGO.

In his daily round of filling-operations probably the severest test to which the judgment, the skill, and the patience of the dentist may be subjected is the making of approximal fillings that will prove durable.

This is especially so in the bicuspid and molars. It is ordinarily an easy matter to produce comparatively permanent operations in morsal and small facial cavities, since in these places we usually treat plainly determinate structural defects, which, once attended to, are lastingly corrected, and fillings in the approximal surfaces of the incisors and cuspids are

commonly quite durable. But so far as the buccal teeth are concerned, this kind of work has a precarious tenure. In the latter we must combat more or less fixed decay-favouring, extra-structural conditions. Further, owing to the frequently far-reaching character of the caries, and to the difficulties offered in the way of imperfect visual and manipulative access, operations here are not so well performed as in the other positions just mentioned. Add to this an unpardonable want of care as to the fate of the margins, and we need not wonder why the life of approximal work is of so short a duration.

The two methods of procedure as determining the shape of the interdental space,—or what is thereby connated, the form of approximal fillings,—are *permanent separation* and *contouring*.

Permanent separation—by which is meant the lateral reduction of cavity-walls so that they become free from contact with the adjoining tooth, or so that only cervical contact may ensue—was primarily practised as a matter of expedience. By such management the cavity was simplified both as to form and accessibility ; was lessened in depth ; and it afforded firm walls against which to impact the filling material. The making of a wide, self-cleansing interdental space had usually as a by-result the freeing of the margin. With the introduction of cohesive gold and its possibilities there was developed contouring,—by which is meant the forming of the fillings so that their outlines will restore the normal, or produce the typical, interdental space and contact. Again, the freeing of the margin was an incident rather than the primary object. The great majority of separatists regard the vertical V as the proper shape of the interdental space after approximal operations have been performed ; and in some cases, a horizontal \triangleleft with the opening toward the tongue or toward the cheek, according to location and size of cavity. Others a decreasing few—cling to the full or slightly modified U ; still others cut the walls of the teeth parallel, leaving non-cervical shoulders, as in the U-space. The advantages claimed for permanent separation are : Self-cleansing space, greater ease of operating, simpler fillings with less surface exposed to occlusive impact. The objections as urged by contourists are : Disfigurement of the tooth ; an interdental space, which, if it remains open, will permit the frequently painful wedging of food-fibres against the gum ; and if it is closed by the approximation of the teeth will transfer the contact point,

line, or surface to the necks of the teeth, and in the case of parallel-wall space will cause the formation of a broad-contact surface with its attendant annoyances and danger; further, in cavities reaching to or under the gum the cervical margin may become covered.

In principle as exemplified by the work of its advocates, permanent separation in the buccal teeth is a violation of nature's order. In examining the normal arrangement of the human teeth, we note that they touch each other at or near the morsal surface; thus forming a V-space which opens more or less widely to the gum. This arrangement presents the largest possible chewing-surface, an almost continuous arch of enamel, which practically prevents the admission of food-fibres (the little that does enter causing no immediate inconvenience to the delicate interdental gum-points, since it passes into an enlarging space); the necks of the teeth so thinly protected against agents of decay stand apart to admit of hygienic cleansing, natural and artificial.

Now, permanent separation inverts the V-space breaks the continuity of the enamel-arch, and establishes the well-known objectionable conditions.

In the degree, however, that, as a rule, permanent separation is to be deprecated for the back teeth, it is highly to be commended, when properly made, for the front teeth. It is in the latter that the separatist has scored his greatest triumphs. It is here that some of his work has lasted fifty-five years and more. Why? Because the margins of his fillings were permanently secured from contact. In the case of the smaller cavities he placed a horizontal V at the backs of the teeth in such a way that, by leaving the incisal edges undisturbed, a permanent wide space was made. Even where he filed a U-space and the teeth gradually came in cervical touch with each other, his work has often proved to be an enduring monument to curative expedient. Here likewise the contact was beyond the margin, though at a more dangerous point.

To deny that, in the case of bicusps and molars, permanent separation (or what was intended for such), by means of the V-space, has been successful, would be shutting our eyes to the truth. It will be found, however, that the teeth were above average quality, or that the separations made did not belie the term "permanent." But a short while ago I had the pleasure—I almost said the honour—of seeing a gold filling made by Dr. Eleazer Parmly over fifty-five years ago. It is still good, and will remain so. In this instance the per-

manent separation—a generous V—has been maintained, leaving the margin free. In fairness, too, it must be admitted that the V-space has been successful for small cavities in short thick-necked teeth, in which case a broad contact-surface was reduced to a line contact. To secure, however, in the case of long, bell-crowned bicuspid and molars, the advantage just spoken of, too much tooth-substance would need to be sacrificed; and contouring in such cases is not only self-suggesting, but imperative. The Arthurian U-space, while it certainly was self-cleansing, and in that way counteracted the deleterious products of stagnation, exposed the dentine to such extent as to cause much discomfort. Yet teeth were saved by and despite such barbarous mutilation. It is needless to say why. The kind of separation that is very narrow and leaves parallel walls—the cavity margins covered wholly or in part—is the very worst made, notably in the case of young persons' teeth. The latter tend to move against each other, space almost disappears; and a broad contact-surface or what is virtually such, is produced. Re-decay under these circumstances is unavoidable. Far preferable to such a space is an honest, wide V.

Contouring fillings was begun about 1855, by Drs. Dwinelle and Rich, who were followed by Drs. Varney, Webb, and a host of others. The advantages claimed for this method of practice are: That after the free cutting away of frail walls the normal outlines of the teeth are restored; that the relative position of the latter is left undisturbed; that the interdental gum points receive the protection nature intended them to have; and last, but not least, a free margin is made and *maintained*. The disadvantages are: More extensive, time-consuming, and ordinarily uncompensated hard work; the soft-gold advocates' objection being that, in case gold is employed the cohesive form and its exactions are the all-dominating feature. That, so far as the buccal teeth are concerned, contour fillings realize the ideal of tooth-repair, is admitted by the majority of the dental profession. Perfect work, however, after this method, is so difficult of accomplishment that not many operators are equal to it. This being the case, very indifferent results in the way of ambitious contouring have been put forth, and discredit brought upon an excellent method. In the average dental practice a rigorous carrying out of the contour method in its fullest sense, as applied to gold fillings, is almost impracticable. Such operations as have come from the hands of Drs. Webb

and Shoemaker would not be paid for. A modification of the contour—that is, such a one as will embody the essential features—bold cutting back and effective knuckling to maintain free margins—is within the reach of any operator, and not beyond the patients' pocket and endurance. Three fourths of the body of the filling may be made of soft gold,—the softer the better,—letting the final fourth constitute the knuckle built of cohesive gold.

Contouring at one time of its history was taken up as a fad. Excessive zeal in misapplication brought this method into utter disrepute. It was eagerly embraced as a field for the production of brilliant operations ; and so far as the outward, the mechanical execution is concerned, fine looking work was produced. Much of it was, however, performed without judgment ; it was but too frequently a beautiful bay window to a crumbling log cabin, and the woeful results gave operators, really less capable of this “jewellers' work,” striking argument against the whole system. As in many other affairs, the use of the thing had to be learned through its abuse.

Notwithstanding that the question as to which of the two methods—permanent separation or contouring—seems to have been decided in favour of the latter, examination of practical work shows but little contouring on principle. Since the advent of crowns, extensive contouring (with gold) has been relegated to the limbo of fancy accomplishments. I venture to say that, consequently, our profession as a whole do less skilful work in this kind of filling than was done twenty years ago.

In some respects it is well that crowning has taken the place of extensive restorations. Better a good crown than a laboriously wrought, uncertain contour filling. Truly it is discouraging when we see operations based on acceptedly best principles, yet fall into inglorious ruin. It is an easy matter to give concrete form to the reflection that if our work, because of the bad quality of the teeth, is to fail despite our best efforts, we may as well be fair ^{as the} ^{article} the trusting patient, and put in a crown, or insert such fillings as will not in their failure involve so great a loss of time and money, and so much suffering as contouring with gold would necessitate. Expediency based upon considerations of physical endurance, quality of tooth substance, small mouth, cranky patient, and question of cost, will decide whether or not large approximal cavities in bicuspid and molars shall be filled with gold. But though the question resolves itself into

one of material, the method by which that material is given form should be such as will in the particular case place the work in the most favourable condition. The poorer the tooth, the greater the necessity for keeping the margins free. This, apart from other considerations, is the important factor in the success of work in approximal surfaces. However perfectly all the steps may have been taken,—preparation of cavity, both as to removal of decay and as to retention of plug; impactment of material and polish of filling, if the latter is so formed that in its approximal relation it fails to preserve its margins free from contact,—re-decay is in all but exceptionally fine teeth inevitable.

Dr. C. A. Brackett once expressed much in a few words when he said that the one thing needful for the durability of fillings is *changed conditions*. The separatist says, "I change the conditions by making wide self-cleansing spaces, thus relieving the teeth of a contact that was instrumental in bringing on decay." The contourist says, "I change the conditions by first making wide spaces, thus relieving the teeth of a contact that was instrumental in bringing on decay and I keep them separated by knuckles of filling material, so applied as to realize or to approximate to the typical interdental space and contact."

The difference in the practical results of the two methods is that, while both, purposely or undesignedly, make free margins, in contour fillings (except in small cavities of the front teeth) that desideratum is maintained, and in flat fillings it is frequently contravened by the subsequent changed positions of the teeth.

The Dental Cosmos.

POPULAR DENTAL EDUCATION.

concerned, c

By H. H. HARRISON, D.D.S.

From the earliest history of professions it has been the general law to wrap the science in habiliments of mystery from the laity, or the people in general. This had the potent effect of keeping the people from knowing how much the professions didn't know. In the ages of long ago this may

have been admissable, but now with the great advance of civilization, education and science, this secrecy should be banished from the professions, and a more liberal tone extended and practised. The past experience has had the effect of bringing into the professions a great multitude of empirics and impostors, and the man who may hang out the sign of a doctor may be thronged with patients no matter how ignorant he may be in the science of medicine. Of course the law's design is to protect the professions by giving diplomas to the worthy, but how many get these degrees that do not merit them, and many more unscrupulous in practice, trail their diplomas in the dust by false representations and evasion of the truth. To-day these latter conditions are having such an evil influence that very many worthy and good men and honourable, are almost compelled to take a back seat. How can this difficulty be modified or overcome? This is what I am now to consider. Popular dental education and information in the proper way I think will overcome most if not all this trouble, and also make our daily work lighter and easier, with better results.

A concise treatise on popular dentistry, carefully and deliberately prepared, and approved by good authority and presented to the people through our dental practitioners, will do the work we so much need. It would not do for any *one* dentist to do this, for his veracity might be questioned, and sinister motives attributed to him: but a dental society, with a large honourable membership, can do it without a question, and be first-class authority. Such a treatise must have a preface, setting forth the design and the good to be accomplished. The main work would of course be written under the various headings necessary to cover the ground. Now you may ask how this is to be done and who is to do it, and who is to furnish the necessary expense. I would suggest that some society that would take it up, would appoint a committee of three suitable members to control it, and they ask members of the profession to write the varied articles, and the committee select the most appropriate of the articles presented, to go into this treatise. Then the books would go into the hands of the publisher to be sold to dentists, to be used in their practice. By such a work the people would be better informed as to the true status of dentistry; as to whom they could trust as men of science and honour, and as to what constitutes a true dentist. It would define the line of duty between the family dentist and the family physician, where

very many contentions are daily arising. It will place a serious stumbling-block in the path of the advertising dentist, who throws his picture-cards broadcast upon the streets, setting forth "my system of bridge-work is unequalled;" "coralite plates;" "my fresh vitalized air;" "teeth extracted by my special process without pain or danger to patient;" "teeth without plates, by my secret invention," etc. It will show the empiric up in the boldest light. It will save millions of great suffering by saving teeth that should not be extracted; curtailing the danger from dyspepsia, nervous troubles, eye and brain troubles, and who knows how much of that dread disease, lung consumption, may be averted by the food being properly masticated, so that perfect digestion, assimilation and nutrition may be accomplished. We do know that defective mastication is the first step in the road of very many diseases. How much now can the dental profession bring to the human family of happiness and health more than they are doing, by a united effort? "In union there is strength," is an adage worthy of our consideration. For one hundred and fifty enlightened and educated dentists to affirm that a certain principle is true, is authority above any one man, and this is the only kind of authority that can have great influence with the people.

Ohio Dental Journal.

DEVITALISATION.

By Dr. J. FOSTER FLAGG.

I have, for more than thirty years, advocated the continuance of arsenical applications until such had accomplished the desired result, regardless of any five hours or five days or five weeks or five months (if circumstances should require it) in the full faith that length of duration of application was a matter of *absolutely no importance* and that in fully formed teeth (and I presume no one would ever risk making an arsenical application in any others) no undesirable sequence would *ever* follow as the results of arsenical impress. As proof of this I had, in years gone by, ample opportunity for following the frequent applications of arsenic which in those

days were made for the obtunding of sensitive dentine, and which having devitalized the pulps, had been the means of quieting all trouble until, in the process of time, these pulps had putresced and had induced peridental irritation from evolution of mephitic gas, *precisely as they would have done had they been devitalised in any other way.* Following such hintings I was *obliged* to abandon all *time* considerations as associated with arsenical applications, and have thus been enabled to make all pulp-cavity work, dependent upon these, in complete consonance with my patients' or my own convenience. In this wise I always prefer that weeks rather than hours shall be the length of duration of applications; and so it is that when serious pulp-trouble unfortunately antecedes arranged summerings or other long absences from home, applications can be made which will effectually preclude any probability of toothache during such times, and which will, most probably bring the tooth, upon return of patient, in excellent condition for thorough and painless treatment in the doing of pulp-cavity and canal work.

Having thus spoken of these applications, I would urge, most emphatically, the need for great attention to considerations *which do exist*; these are the proper placing, the precluding of the slightest pressure, the maintenance of position and the prevention of leakage. It is the recognition of the vast importance of these that renders it needful that no useless distracting thought should be expended, and it is these that imperatively demand that every attribute of "coverings" should be known and utilized, that thus temporary stopping, zinc phosphate, and facing amalgam should each fill its niche in this regard as no other materials or devices can. With these views it becomes not only undesirable, but culpable, that wax, cotton with sandarac or other gum varnishes, or even gutta-percha or any other than the three coverings mentioned should be used, as no others permit the secure and proper utilization of arsenical applications. I think it will be conceded that, with my long practice, almost exclusively directed to the "treatment" of teeth, and with my experience as a clinician of dental therapeutics during a college career of thirty years, I have probably entered as many, if not more, canals than any other of our country; and that I have acceptable skill in this work has been pleasantly attested to by patients, students and many fellow practitioners. I therefore offer, as a testimony which may be comforting to some

who, like myself, are not so successful, the statement that I not infrequently meet with canals whose entire length I feel it equally imprudent and impossible to explore. More than this, I am cognizant of roots, in goodly number, the canals of which I *know* cannot be followed by the teeth in the hand. How much less then, would this be possible in the mouth? In fact, this is just the barrier which, in my opinion, prevents belief in any statement beyond respectable ability as associated with canal work. It is in this connection that I desire to combat to the utmost, the claims of thorough removal of pulp tissue as a material of first importance. My fundamental axiom in relation to all dental work is, never do anything which, if proven detrimental, cannot be remedied.

Therefore, as in a large proportion of canals it is comparatively easy to go to the very end, I regard, as a matter of first importance, that the apical foramen shall not be passed, and above all, not enlarged.

Viewing this work of canal entrance and cleansing as very important, I desire to refer to the suggestion of Dr. J. R. Callahan, as presented in his paper of July, 1894, in which he advocated the opening up of canals by means of "fifty per cent aqueous solution of sulphuric acid." After a year's experience of this method I can speak of it in terms of unqualified approval, and say that I regard it as *the* step in advance, in connection with canal work, which has been given us during the past twenty-five years. Not only in fine, tortuous, and ordinarily inaccessible canals does this process make easy much that would be both difficult and dangerous, but it affords the most prompt, the most efficacious, and the most satisfactory method of entering, cleansing, and beautifully preparing the largest and most accessible canals. I would call attention to his "pumping motion" of using the probes, both small and great, as a decided improvement over the dangerous rotation and twisting motion by which alone drills or broaches can be made available, for by this modification the danger of breaking off probes in canals is almost entirely abrogated. I have found that there is yet danger of this if steel probes are used, as these in time become corroded by the dilute acid. I also found that electro-plated probes soon lost their gold, but with iridium-platinum gold wire probes I have had an immense amount of comfort in doing and demonstrating this kind of work, for which I would tender Dr. Callahan the most hearty thanks.

Dental Cosmos.

STAINING ARTIFICIAL TEETH.

By Dr. G. H. WILSON.

Any one desiring to begin this work can purchase either the Poulson or Ash & Son's set, through the dental depots, or the materials I shall name, at any art store. I shall give two lists, the first is all I recommend to the novice, the second to be procured as the emergency requires, or the novice's ambition dictates. First. Sepia, light grey, No. 1 ; ivory black ; oil of cloves ; alcohol ; one small pencil brush ; one stippler brush ; one spatula, horn or steel ; one glass slab. Second. Rose pompadour (gum colour) ; ivory yellow ; brown yellow, celestial blue, and relief white. These colours are the Lacroix, except the relief white, which is Dresden. All mineral paints have to be burned into the porcelain. We will describe this process later.

Desiring to change the tone of the tooth, or give a deeper shade, it will be necessary first, to remove all wax and clean the tooth with alcohol, drying it with a clean cloth, then hold the tooth by the pins in a pair of pliers ; having mixed the colour with oil of cloves, either thin or thick as we desire a light or dark shade, apply with the pencil brush. The paint can be more evenly spread with the stippler brush. The surface should be gone over with a stipple motion, that is, striking with the end of the brush, the brush being held at a right angle to the surface of the tooth. At any place that the paint is not heavy enough, more can be added by the pencil brush and then stippled. If the colour is too heavy at any portion of the tooth it can be removed by wiping lightly with the end of the finger and then stipple. When all of the teeth are so treated they are placed upon a slab to dry.

To fix the colour and give it a glazed surface it is necessary to subject it to a high heat, about 2,000 degrees F., or the fusing point of gold. This burns out the oil and fuses the solid particles of the stain which unite with the surface of the porcelain. It makes little difference how this heat is obtained, just so we get it, if evenly applied, that is, not so suddenly as to fracture the tooth. Having thoroughly dried out the oil by placing the fire-clay slab over the Bunsen burner, the teeth can be safely subjected to the higher heat and brought to the proper temperature in two minutes time. Any furnace

can be used. Atrophy and worn conditions are produced by grinding and then staining.

Gum colour, either light or dark colour, according to the amount of rose pompadour used. A still lighter effect can be produced by building up the portion representing the gum with some white body ; bake it on, then paint with the gum colour and fire.

Ohio Dental Journal.

AMERICAN DENTAL INSTITUTE BONDS.

We have every respect for the American Dental Institute from the tooth-drawing point of view, but as an investment it is to be doubted if it can rank quite so high as its projectors seem to think. An issue of 4000 Debenture Bonds of £10 each, carrying interest at $5\frac{1}{2}$ per cent., suggests a very big business, since, if the Debenture bonds are adequately secured to the extent of £40,000, it is obvious that the shares should be very valuable indeed.

The Debenture stock, we are informed, will constitute "a first floating charge on all the present property and assets of the Company," but, unfortunately for the guidance of the shareholders, no particulars are given of these assets or properties. It is true that Messrs. Jackson, Pixley, Browning, Husey and Co., of 58, Coleman Street, London, give a certificate, showing what the revenue was in the last three years, and how it has improved in the last two years ; but it is a significant fact that these gentlemen feel called upon to say that "there being an imperfect system of book-keeping in connection with one of the businesses, we are unable to prepare an exact profit and loss account ; but by means of the testing, by reference to original invoices, the average gross profit on the goods sold, *we have ascertained what we believe to be an approximate gross profit.*"

It is therefore shown that no reliance can be placed upon the figures that are put before us, so that the debentures cannot be regarded as anything better than a speculative investment, even if they can be classed so high. The revenue in 1895 was £46,535, taking into consideration the approxi-

mate plan pursued by the chartered accountants, while the net profit was £13,546. What the debentures are to be secured upon is not in any way stated ; they certainly cannot be secured upon profits, since, although they are entitled to a first call upon them for interest, we are afraid that the disappearance of the profits would leave the bonds in a very bad position for being redeemed.

We cannot understand the Directors of this undertaking consenting to put forward an issue of Debenture bonds to the extent of £40,000 on such a flimsy basis. They say that "it is rarely an opportunity occurs for the safe investment of money on such favourable terms"; but these terms can scarcely be regarded as anything but very unfavourable, since, while we do not doubt for a moment that there is something in the way of furniture, leases, etc., to secure the bonds upon, it is certain that no particulars of them are put forward.

The money acquired from the present issue of debentures is to be used to purchase a "dental trading depot with its full stock," and also to acquire "other dental businesses"; but the Directors do not say what these businesses are to be valued at, nor whether their security will be adequate to cover the nominal amount of the present bonds. This being so, we are reluctantly compelled to say that the American Dental Institute has no right to expect the British investor to give it his encouragement.

Vanity Fair.

DENTAL DEBENTURES.

What sort of security ought an investor to get who takes debentures in a limited liability company? The question is beginning to be an important one, since a number of commercial and quasi-commercial undertakings are issuing debentures which are secured, for the most part, on such intangible assets as goodwill and book debts. The word "debenture" has come to mean something more than the right to priority and fixed interest; it is popularly supposed to imply a certain guarantee of principal. No such guarantee can, however, be possible where the chief item of the security is the goodwill of the business, which in a few years of

unfortunate trading may completely disappear. We are led to make these general remarks by the "private and confidential" issue of a prospectus inviting the subscription of £40,000 debenture bonds by the American Dental Institute, Limited. There is no reason why the matter, although the directors are anxious to confine it to a limited area, should not be publicly discussed, inasmuch as the people who are in the first instance asked to subscribe are the patients and employés of the institute some, at least, of whom may not perfectly appreciate the nature of the security that is being offered them. The American Dental Institute, although registered under the Companies Act, does not appear to have made any public issue of its shares. We glean this from a paragraph in a circular accompanying the prospectus which says, over the signature of the "official secretary": "*It is intended, when the Ordinary shares of the company are placed on the market, that applications from holders of these debentures shall have the preference.*" That may or may not be a valuable privilege, according as things turn out; what we are more concerned about is that no information is furnished respecting the present capital of the company, or respecting the holdings of the three Messrs. Clifford who, by a happy family arrangement, figure as the directors, or respecting the conditions of tenure and remuneration laid down for them in the articles of association.

The Institute consists of four branches in London and five in the provinces, and a certificate is furnished by a well-known firm of chartered accountants to the effect that the nine branches, together with two new businesses which it is proposed to acquire, showed net profits of £12,496 in 1894 and of £13,546 in 1895. One is inclined to wonder why with such extremely satisfactory results, the Institute should be in want of any more capital. With a net profit of £13,000 a year most directors would be content—assuming, of course, they entertained a reasonable degree of confidence that it was going to last. But the three Messrs. Clifford are not satisfied. They want to purchase a dental trading depot, with its full stock, and also to acquire other dental businesses, and to provide the necessary capital for extending and working the same. So, in order to extend the Institute's operations—which, we should have thought, they might easily have done by keeping a fair proportion of the profits in the business, instead of dividing them—they seek to borrow £40,000 at 5½ per cent. interest, and they have the calm assurance

to assert that "it is rarely an opportunity occurs for the safe investment of money on such favourable terms." If the difference between the certified net profits and the amount required to pay the debenture interest be the only point considered, there may be some justification for the claim of safety. But a debenture ought to be secured in a very different way from that. Suppose the trade falls off, and the profits dwindle or disappear, what then become of the margin of which such a great feature is being made; On what are these proposed £40,000 of debenture bonds really secured? It is significant that the directors' answer to this query does not appear, where it should do, in the prospectus, nor does it bear the signature or authority of the accountants who certify the profits; it is furnished at the back of the circular already referred to, and simply amounts to an *ex parte* statement of the position from the point of view of a Board seeking to obtain money.

The assets, then, according to this extra-official statement, consist of goodwill, £30,000; stock of dental materials in hand and *at the store about to be acquired*, £6,000; book debts *on December 31st last*, £4,141; furniture and fittings, £1,865; and leases and cash balances the value of which is not specified, or has not been ascertained. It is explained that the goodwill is always valued in dental practices at not less than one year's gross cash takings; but it has been put down in this case at the "very moderate" figure of £30,000. We should like to have had Messrs. Jackson, Pixley and Co.'s idea of this valuation; but whether they endorse it or not makes no difference to our contention that goodwill furnishes no real security to debenture-holders. In the face of the amount involved in this particular asset, and its conclusive bearing on the question of security, it is not worth while to deal seriously with the other items, or one might say something about the possible difference between the value of the book debts now and last December (the very fact of there being book debts in a business of this kind leads to the supposition that they are at least doubtful), and also about the proportion which the stock to be acquired may bear to that already owned. It is difficult to understand the apparent confidence with which the directors point out that this debenture issue is not a speculation but "a secure investment," and assert that the bonds will immediately be worth a premium. It is indubitable, of course, that $5\frac{1}{2}$ per cent. is a good rate of interest; but it is a rate of interest which "a sound com-

mercial undertaking such as this claims to be would not dream of offering in these times of cheap money, unless the security it had to offer was of a very third-rate kind. To ask investors, whether patients of the institute, employés, or others, to find £40,000 to develop a mushroom company about whose capital, real or nominal, no particulars are given, seems to us to be a proceeding certainly not erring on the side of modesty. It is possible that the large profits of 1894 and 1895 may have been to some extent not only dental but accidental, and that the future, notwithstanding the proposed extension of the business, may not be so favourable as the past; but, in any case, the net profits of an advertising dental business cannot be regarded as a safe security for a debentureholder, and we should strongly advise the patients of the company to be content with the luxury of paying their fees without seeking to get them returned in the form of interest.

Financial News.

We are enabled, to-day, to supplement our article of yesterday with some further particulars respecting the American Dental Institute, which is seeking to place £40,000 in debenture bonds. The company was originally registered in October, 1887, with a capital of £1,000 in £1 shares. By agreement dated January, 20, 1887, R. Clifford, of 8, Grosvenor street, W., sold the business carried on by him at 55, St. James's street and 44, Finsbury square, including dental instruments, &c. for the sum of £993 in fully paid shares. All the signatories to the memorandum of association were, with one exception, members of the Clifford family. In 1889, the list of shareholders comprised seven Cliffords and three others, and there was no alteration in the list for 1891. By special resolution of April, 19, 1892, the capital was increased to £6,000, *i.e.* 5,000 new £1 shares were created, the first £1,000 being made six per cent. prefs. The shareholders were the same in 1892, and the last return, filed December 18, 1895, showed that all the shares allotted up to the previous October were 1,000 Preference and 500 Ordinary, the cash received being set down at £507 and the consideration paid in shares, at £993. The seven shareholders are still all Cliffords, with the exception of D. de Pinna, who holds one Preference share and one Ordinary; but no one

save R. Clifford, of 55, St. James's Street, holds more than one share, the said R. Clifford figuring for 994 Preference and 500 Ordinary. Here, then, we have the startling fact that a business which, with a cash capital of not more than £500, has made profits of £13,000 a year, is now in want of no less than £40,000 to extend its business. In the light of the particulars we have furnished from official records, the impudence of this debenture issue is absolutely astounding.

Financial News.

THE AMERICAN DENTAL INSTITUTE, LIMITED.

Efforts are being made by the American Dental Institute, Limited, to issue 4,000 Debenture bonds of £10 each, bearing interest at the rate of $5\frac{1}{2}$ per cent. The prospectus conveys no information as to the value of the property upon which these Debenture bonds will be secured; but it includes a certificate from Messrs. Jackson, Pixley and Co, of 58 Coleman Street, in which a statement of profits is given, with the proviso that "there being an imperfect system of book-keeping...by reference to original invoices...we have ascertained what we believe to be an approximate gross profit." This is really too delightful for words, and we can only admire the courage of the directors of the American Dental Institute in asking for £40,000 from the public on the top of such a modified statement.

Daily Mail.

FOR THE TEETH.

Some time ago we had a good deal to say from the medical point of view about the people who call themselves American dentists. They are now budding out into finance. The American Dental Institute is attempting to issue privately

£40,000 in debenture bonds bearing $5\frac{1}{2}$ per cent. interest. There is the usual accompanying letter to the effect that the issue does not offer a speculation but a secure investment, and we are let into the secret that it is intended to place the ordinary shares of the company on the market. Secure investments bearing $5\frac{1}{2}$ per cent. interest are scarce nowadays. There is a glowing statement of profits duly certified, but the capital of this limited liability company is not stated, nor can it be found in any ordinary book of reference, and as to the assets and liabilities these are stated but not certified. There are three directors—all Cliffords. It suggests itself that very careful consideration should be given before responding to the appeal for capital.

Pall Mall Gazette.

TO MAKE VEGETABLE TOOTH-BRUSHES.

Take marine marshmallow roots, cut them into lengths of 5 or 6 inches, and of the thickness of a middling rattan cane. Dry them in the shade, but not so as to make them shrivel.

Next finely pulverise 2 oz. of good dragon's blood, put it into a flat-bottomed glazed pan with 4 oz. of highly rectified spirit and $\frac{1}{2}$ oz. of fresh conserve of roses. Set it over a gentle charcoal fire, and stir it until the dragon's blood is dissolved; then put in about thirty of the marshmallow sticks, stir them about, and carefully turn them, that all parts may absorb the dye alike. Continue this until the bottom of the pan be quite dry, and shake and stir it over the fire until the sticks are perfectly dry and hard.

Both ends of each root or stick should, previous to immersion in the pan, be bruised gently by a hammer for half an inch downwards, so as to open its fibres and thereby form a brush.

They are generally used by dipping one of the ends in the powder or opiate, and then by rubbing them against the teeth, which they cleanse and whiten admirably.

Chemist and Druggist.

Reports of Societies.

STUDENTS' SOCIETY, LIVERPOOL DENTAL HOSPITAL.

On February 17th, the chair was taken by the Vice-President, Mr. J. P. Roberts.

The chairman announced that the Council had arranged to hold a Clinical Meeting on March 3rd.

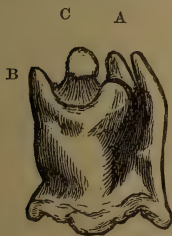
Amongst the Casual Communications were the following:

Mr. Keatinge showed a partially calcified pulp which he had removed from the palatine root of an upper molar.

Mr. Drake read notes of a case of dentigerous cyst in connection with a wisdom ; also a case of perforated antrum.

Mr. Nixon mentioned a case of a large abscess cavity in the superior maxilla, into which he was able to pass his finger after making a free incision, but which was not antral, the floor of that cavity being probably lifted up.

Mr. Nixon also passed round photographs of an enamel nodule, situated on the dilated end of the palatine root of an upper molar, the canal being somewhat triangular in shape, the base at the apex, and opening by two foramina, one on either side of the nodule.



A. Buccal Roots.
B. Bifurcated Palatine Root.
C. Enamel Nodule.



Diagrammatic Section of
Palatine Root.

Mr. Woods showed a model, where a supernumerary had caused considerable irregularity.

Mr. Lloyd related a case where the wearing of a lower plate had produced considerable hypertrophy of the gums.

The Chairman then called upon Mr. Nixon for his paper on "Pulp Treatment and Root Filling," which is published on page 773.

DISCUSSION.

Mr. Harrison narrated a case where he had failed to devitalise after repeated arsenical dressings. This occurred in several teeth in the same patient. He left the arsenical dressings on finally and inserted fillings, and no further trouble had ensued. The interest attached to the case lay in the fact that some years back the patient had taken arsenic internally for some length of time.

Mr. Keatinge asked for the treatment of pulp stones.

Mr. Drake stated that on several occasions he had filled very accessible roots with salol.

Mr. Mansell spoke highly of arsenic fibre for devitalisation, and preferred to let arsenic act through a thin layer of dentine, and to add a further dressing than to make an exposure with the engine, in a case where it had been decided to devitalise and yet where there was not an actual exposure by caries.

The paper was further discussed by Messrs. Anderson, Saul, Lloyd, Jones, Woods, Mountford, and Osborn.

After some remarks from the chair, Mr. Nixon replied, and the meeting terminated.

Dental News.

CLAIM FOR ARTIFICIAL TEETH.

SCOTT v. GARWOOD.—Plaintiff, Alexander Thomas Scott, dentist, High-street, Ramsgate, sued defendant, Alfred Garwood, of Cliff-street, Ramsgate, to recover the sum of £7 for stopping a tooth and for some artificial teeth.

Mr. A. B. Burrows, solicitor, appeared for the plaintiff, and Mr. James Emery, solicitor, was for the defendant.

Plaintiff said that on the 27th April defendant came to him to have a tooth stopped, and in the course of conversation he told defendant that he wanted some artificial teeth. He told defendant the price would be six guineas. Defendant agreed to have the artificial teeth and plaintiff proceeded to make them. Plaintiff subsequently fitted the teeth, and as far as

he could see they fitted very nicely indeed. Defendant said he would send a cheque in a few days; and plaintiff wrote to him two or three times, receiving an answer to one that the plates had made his mouth very sore. The plate, plaintiff said, was properly made. His claim was £6 6s. for the artificial teeth and 14s. for stopping the tooth.

Cross-examined by Mr. Emery plaintiff said he could not say that his expression to defendant was "It will be a very inexpensive matter. I could make a whole set for six guineas." The teeth in question were very well made indeed; and he would not expect a man to pay for the teeth if they did not fit properly, provided he was given an opportunity to make them fit properly.

John Edwin Husband, licentiate of the Royal College of Surgeons, Edinburgh, practising as a dentist at Canterbury, said he had examined the teeth in Court that morning. They were fair ordinary work, and he would say that six guineas would be a fair charge for a licentiate in dental surgery to charge for them. If a man complained about the teeth not fitting, he would expect to make them thoroughly satisfactory.

James Smith, an assistant to Mr. Scott, deposed that he went on two or three occasions to defendant's house in Cliff-street to see defendant.

Cross-examined: Witness said he assisted in making the teeth. He did the whole of the mechanical work. The only part he did not do was the taking of the mould. He had been apprenticed to Mr. Scott for over two years, but this was not his first place of the kind.

Mr. Emery, for the defendant, said after hearing Mr. Husband to the effect that six guineas would be a reasonable charge for a licentiate of dental surgery to make, he thought His Honour would agree that six guineas for a vulcanite plate made by an apprentice of two years' standing was an excessive charge. Mr. Scott told defendant that he could make a set for six guineas, and defendant thought he would have to pay about three guineas for the eight teeth. The teeth, however, were so thick and heavy in his mouth that he could not bear them.

Defendant deposed that he lived at 5, Cliff-street, Ramsgate, and on the 27th April he was suffering from toothache so he called on plaintiff. Plaintiff pressed him very much to have some false teeth, and when he asked the price plaintiff said "I should not charge you much. I could make a whole set for six guineas." After he had got the artificial teeth he

tried them, but the bottom one shifted while he was eating. The dentists he had spoken to had put the value of the teeth at two guineas, and told him that he ought to have had a gold plate for the price. One dentist told him he would supply the teeth for a guinea.

His Honour : Don't you have anything to do with him.

In cross-examination witness swore that he only saw the assistant once, and did not tell him that the teeth were easy. He should think he tried to endure the teeth for about a week. When he found they pained him he did not have an opportunity of going to Mr. Scott.

His Honour observed that no opportunity had been given to Mr. Scott to put them right. According to his experience these things usually did want some adjustment.

Plaintiff said that defendant had offered him three guineas and witness said he would accept five guineas.

His Honour said he would not have thought they were worth anything like six guineas, and gave judgment for £4 18s., being four guineas for the teeth and 14s. for the stopping.

ANOTHER PROSECUTION AT CARDIFF.

At Cardiff First Police court on August 11th, Mr. T. H. Belcher appeared on behalf of the British Dental Association (instructed by Mr. John Percy Oliver, dentist, Queen Street, Cardiff) to prosecute Mr. N. A. Givovio for committing an offence under the Dentists' Act, 1878. The summons charged defendant for acting as a dentist under the style of the American Artificial Teeth Company in Queen Street, and not being a legally qualified practitioner. Givovio was represented by Mr. Alfred Jackson.

Mr. Belcher explained that defendant held a Californian degree, but the English statute did not register or protect such a degree here. Since the taking out of the summons defendant had disposed of his business and left the town, and, the object of the prosecution being thus obtained, he (Mr. Belcher) would only ask for a nominal penalty.

The Stipendiary : I suppose you say, "Thank God, we have got rid of a knave."

Mr. Belcher : Yes.

The Stipendiary then imposed a fine of one shilling.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Dear Sir,—I ask with all due respect to the Medical Council, why should a certain firm (the proprietor himself unregistered) be allowed to open up several branches in the Midlands, for the practice of Dental Surgery, at the same time engaging unregistered men who act in the capacity of managers? I do not write with any vindictive feelings, but it is dreadfully hard when a man has gone through the curriculum required by the Medical Council to find himself swamped by all manners of advertisements which he is prohibited to use.

I bought a practice in the Midlands, and in less than eighteen months I was completely ruined by the "Guinea Jaw" firm. Surely the Medical Council will stand by those who have, to their own disadvantage, held up the dignity of their respective Colleges.

I am, Sir,

Yours, &c.

A QUALIFIED AND REGISTERED VICTIM.

August 25, 1896.

USEFUL HINTS

By Dr. H. H. SULLIVAN, Excelsior Springs, Mo.

TO SHARPEN PIANO WIRE BROACHES.—After filing down in the usual way, place on your mandrel one coarse emery disk and one fine one with the grits facing each other; adjust mandrel in hand-piece to your engine, now hold the wire to be smoothed down to as fine a point as desired between the disks, and run engine at moderate speed, turning the wire from right to left that it will be true when finished.

CEMENT SPATULA.—Take an artist's pallet knife with a three inch blade, and cut it off so it will be one and seven-eighths inch blade, and you will have an ideal spatula for cements. With this you can thoroughly incorporate the liquid and powder. I use a piece of plate glass $\frac{1}{4}$ inch thick, 5 by 5 inches, on which to mix cement.

Items of Interest

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of JULY, 1896.

| | |
|---|------|
| Number of Patients attended | 929 |
| Number of Extractions | 505 |
| Number of Extractions under Anaesthetics | 259 |
| Gold Stoppings | 134 |
| Other Stoppings | 192 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 274 |
| Crowns | 17 |
| Irregularities | ... |
| Inlays | ... |
| Total | 1381 |

ERNEST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 688. LONDON, SEPT. 15, 1896. VOL. XXXIX.

HOW TO MAKE A SMALL FURNACE FOR BAKING PORCELAIN.

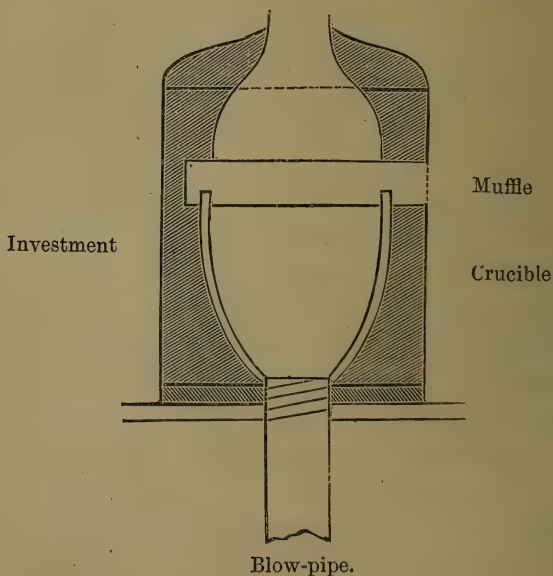
By WILLIAM RUSHTON, L.D.S.Eng.

First obtain from a wood-turner, a hollow cylinder of wood, $4\frac{1}{2}$ inches long, inside diameter 3 inches, sides 3-16 in. thick, open at the top, but having a bottom half-an-inch thick. Let this pattern be cast in iron, and let a round hole be drilled in the side, the centre being $3\frac{1}{4}$ inches from the bottom, and another hole be drilled through the middle of the bottom. The hole in the side should be 1 inch in diameter, and is for the mouth of the muffle; the hole through the bottom is to admit the nozzle of a Fletcher's Injector Blowpipe. Let the nozzle of the blowpipe be tapped for about $\frac{3}{4}$ in. down, and let the bottom hole of the furnace be threaded so as to allow the blowpipe to be screwed into it. Let the leg of the blowpipe nearest the nozzle be filed off. Next obtain one of Morgan's plumbago crucibles, 3 inches high and $2\frac{1}{2}$ in. diameter. With the sharp end of a rivetting hammer chip a hole in the bottom of the crucible, and with a file enlarge the hole to the diameter of the blowpipe. Next obtain a piece of platinum foil $3\frac{1}{2}$ in. by 3 in. of the thickness usually employed to cover roots in pivoting. Bend it in this fashion with the ends interlocked, and hammer the ends closely down, to prevent gasing. We now have a platinum muffle, $3\frac{1}{2}$ ins. long, with a flat bottom 7-8 in. wide, dome-shaped top and

open at both ends. At one end make a few cuts with scissors into the dome-shaped part to allow of the end being closed by bending the platinum down at right angles. Now place the crucible in the furnace and file it down where the muffle



goes until by passing the muffle through the hole in the side of the furnace it rests on the crucible on a level with middle of the hole. Now sink the crucible in the bottom of the



furnace with sand and plaster, taking care to keep the hole at the bottom free. Then mix some fresh sand and plaster, and plaster it round the ends of the muffle now placed in position, taking care to imbed the far end in the investment. Build the investment up somewhat dome-shaped, allowing $\frac{3}{4}$ in. between

the investment and the muffle on each side, and having about $1\frac{1}{4}$ in. aperture above. Let the part of the muffle that projects from the hole in the side, be turned down flush. Make a tray with another small piece of platinum foil. A door for the muffle can be made with a little sand and plaster or fire-clay. This furnace is large enough for four teeth or a small bridge. With a hole drilled in the bench for the blowpipe to pass through, the furnace can put together at will and kept out of the way when not wanted. The blowpipe can be used for melting gold or other purposes of the workshop. A second plumbago crucible with a half-inch hole knocked in the bottom and used as a funnel after the furnace is lighted is an improvement. I am told that asbestos and plaster is better than sand and plaster, and also that fireclay four parts by bulk to one of sawdust, and made into a paste with silicate of soda (liquid silex) is better still. The total cost, exclusive of the foot-blower, should be under two pounds, the chief expense being the platinum.

GUTTA PERCHA FILLINGS.

By J. L. DAVENFORT.

Secure sufficient separation, and prepare the cavity as carefully as if for a gold filling—no retaining points necessary. Touch the cavity walls with copal-ether varnish, and allow a few moments for evaporation. The sticky surface assists in holding the first pieces of gutta percha in position. Use gutta-percha of good quality, and be cautious not to overheat. Pack with a warm instrument ; and when completed, hold a cold burnisher against the surface to cool. Trim and finish as thoroughly as though gold. When not exposed to attrition or wear in mastication this work gives marvellous results.

Items of Interest.

British Journal of Dental Science.

LONDON, SEPT. 15, 1896.

THE STUDENT.

Once again we are fast approaching the season when the Medical Schools, great and small, and with them the Dental Schools, re-open their Lecture Theatres and receive into their educational arms the stream of recruits to the ranks of Medicine, Surgery, and Dental Surgery, coming from all parts of the Kingdom and the Colonies. The English Diplomas have always been highly prized and highly respected, and the reason is not far to seek. The English Colleges have always striven to keep pace with the requirements of advancing education and science, by steadily and systematically enlarging the scope and rigour of their examinations. And although this has had the effect of inducing many candidates to present themselves at centres where the difficulties are not so insurmountable, yet the policy of aiming at a high level is incontestably a politic one. In glancing over the Dental Pass Lists of the various American Universities, we prefer to believe that the absence of candidates hailing from Great Britain does not mean that they are rejected, but that they are content to obtain diplomas at home, which for rigour and completeness compare favourably with any in the world. We do not say our examinations are perfect. We should like to see more evidence of a good general education amongst our students. The Preliminary Examination is often simply crammed up, and this remark often applies to other parts of the Examinations. Still, the general tendency is upward, and the student of to-day is a very different character from his prototype of even a generation since.

To those Dental Students who have completed their

pupilage and are preparing to commence their Anatomical and Surgical work at Hospital, a word of advice is needed. Many youths who come up to the various large centres are "their own masters" for the first time in their lives, and although they may be well intentioned and do not get into actual mischief, yet they manage to waste a great deal of time—which has an imperceptible knack of gliding by—until they are brought face to face with the fact that the Examination is upon them, and that they are deplorably unfit to present themselves. Medical Examinations now-a-days are no joke ; neither are dental ones. Our present curriculum is not a day too long, and when the amended curriculum comes into force it would not be at all surprising to see the period lengthened. To waste time at the beginning then, is utter folly, as many a promising student finds to his cost. As regards the new subjects in the curriculum, we shall be surprised if our Schools do not anticipate the requirements of the College in their anxiety to turn out the best men possible. We know, at least, of one School which has done so for some considerable time, in the subjects of practical metallurgy, dental materia medica, dental histology, and lectures on Operative dentistry, and we have no doubt other Schools are equally alive to the importance of giving adequate instruction in these subjects.

The Student of to-day has only himself to blame if he does not become a good operator. As regards being a good mechanic, that rests largely with the training he has received from his master, and varies accordingly. In addition to the Institute of Dental Technology, we expect to see that other Schools will follow the example of Edinburgh and try to meet the difficulty experienced by some parents and guardians, by taking pupils for the three years' mechanical training. We think it is a move in the right direction, and wish them all success, though we hope the experiment will not be tried without taking care to make the training a pattern of its kind. Let that be as it may, there is no doubt that in our Dental Schools there is every opportunity for the

earnest student to become a good operator. There are good Schools, tuition, appliances, and alas, an unending stream of suffering fellow-beings, upon whom he learns to perfect himself in his calling, and whose gratitude he should endeavour to earn, by sympathy and careful manipulation.

THE TEETH OF POOR LAW CHILDREN.—The *Westminster Gazette* applauds the recent resolution passed at the British Dental Association's meeting, calling attention to the need of providing dentists to look after the teeth of the children under the guardianship of the State. The *Gazette*, however, would go further, and taking pattern by Brussels, would have dentists provided by the State to see to the proper condition of the teeth of Board School children. We certainly think it is as important as providing pianos.

THE NEW WOMAN DENTIST.—Dr. Josephine Maude Rankin, whose portrait appears in the columns of the *Daily Mail*, in a very becoming cap and gown, is, we are told, "the manager of one of the largest dental Associations in New York, young, pretty, and thoroughly versed in professional ways." From small beginnings it seems Dr. Rankin has done very well for herself, as "she now occupies an entire building, and has no fewer than ten men in her employ." It is a beautiful feature in her character that she does not object to women as co-workers, but has never received an application for work from a woman dentist. We wonder does Dr. Rankin treat dead teeth in her College cap and gown, or are these only used to inspire awe in the breasts of the ten men beneath her sway? Anyway after seeing the portrait and reading the half column, we are delighted to think that she is "thoroughly versed in professional ways."

PROFESSIONAL WAYS.—We think that some of our brethren a little nearer home are "thoroughly versed in professional ways," also, when we read in the personal columns of our dailies, "Dr. So and So has returned to town

for the Season," or "Dentist O'D. has returned to his address in full, from the Annual Meeting in London." How can we expect the advertising man, who is perfectly honest in his undisguised simplicity—to cease from his ways, if those who make pretensions to professional feelings, act in this way?

DENTISTRY IN JOHANNESBURG.—*The Scottish Highlander* is recommending his canny dental brethren to go to Johannesburg. Five pounds for a gold filling, and a cheap set of teeth for sixteen times that sum would be an inducement to a good many, in, as well as out of Scotland, if it were not for the fact that everyday expenses are in [much the same ratio.

DENTISTS AND THE ARTS.—It has often been remarked that our profession has a very considerable proportion of members blessed with an artistic temperament. Some of the most honoured of our scientific leaders wield the pencil and the brush in a masterly fashion, while in the sister art we can boast of at least one popular favourite who has abandoned dentistry for the lyric stage. We now hear that a German dentist, Herr Franz Curti has composed a charming comic opera on a Japanese theme. The price has been received with great favour at Frankfort, Mannheim, and Dresden. We hope we may have the opportunity of hearing the pretty melodies of our *confrere* before long, in our own country.

EXTRACTING A LION'S TOOTH.—A large lion in Chicago recently refused all food, and a carious tooth was found to be the cause of the trouble. His majesty submitted to the process of pinioning quietly enough, but the fun began when the dentist, armed with a huge pair of infirmary forceps, attempted to grasp the offending molar. The lion's roars and struggles were terrific, and it seems that no less than fifteen men were required to keep the great brute in subjection until the operation was concluded.

THE DERIVATION OF CATAPHORESIS.—Professor Morton in the *Cosmos* is reported to have said in his paper “The word is derived from the Greek ‘cata’ to flow, and ‘phoreo’ downwards.” Either the Professor has been cruelly treated by the printer, or else his Greek has got a bit rusty. “Cata” is of course downwards, and “phoresis” is from “phorein” to carry.

THE BLACK TEETH OF THE SIAMESE.—We see that the blackness of the Siamese and Burmese teeth is, on the authority of an Indian missionary, not caused by chewing betel nut and lime, as is often thought, but is produced by a regular process of varnishing. The kernel of the coconut is first charred and then ground up with oil to a fine paste. This is then, by some process known to the natives, converted into a hard varnish, which is applied to the teeth and allowed to dry on. Eating does not seem to affect it, and the blacker and more polished the teeth appear, the greater their beauty. No Burmese belle would consider herself beautiful if her teeth were white like a Chinaman’s or European’s.

VICTIMS OF THE WHEEL.—The ancient death of “being broken on the wheel” seems to have its modern counterpart in bicycle accidents. The sad death of poor Dubois, the leading dentist in France, was occasioned by a fall from his machine a short time ago. A dental assistant, we are informed, is now lying in St. Mary’s Hospital, suffering from a fractured skull, and with but little hope of recovery, while Mr. Frederick Goring, of Islington, is the latest victim. We have not followed the example of Austria and Germany, in requiring any test of proficiency before permission is given to ride in towns, nor do we confine our cyclists to a certain limited number of thoroughfares, but we think that greater care ought to be exercised by many of our cyclists in riding through our busy streets.

Abstracts of British & Foreign Journals.

OVERWORK.

By IRA B. CRISSMAN.

There are a great many young men in the profession who make the mistake of working too much. I have worked a great many nights and Sundays, in addition to working all day, and I found my health was giving out. Dentists work entirely too long hours, and they take too little exercise and recreation. I know one or two men in the profession who are working hard all day and experimenting, and we will have a longer list of those that are dead of this Society, if they do not stop it. In my business I make it a practice to close every Saturday afternoon, it does not make any difference who comes or calls, and I find I make as much money in the summer as in the winter. I have a great deal better health, and have a good time. I think if the dentists adopted this practice as a class, closing their offices on Saturday afternoons and getting out in the open air and imbibing a little ozone, it would be better for them.

ARSENIOUS ACID FOR SENSITIVE DENTINE.

By Dr. REGISTER.

Sensitive dentine is the greatest bugbear to the profession. Nothing, I think, causes more severe strain and loss of nervous energy than to work upon sensitive teeth, and anything to relieve that is a blessing alike to the laity and our profession. I find by the use of warm air and the application of a coagulant we get improved results. Carbolic acid I believe is our best coagulant, because it leaves no stain. To add to this partial success in destroying sensitiveness, I am using after a coagulant a one per cent. solution of *arsenic*. I know, when I speak of applying arsenic for the destruction of sensitive tissue, that I am treading upon very critical ground; but for several years I have been using Fowler's solution in very sensitive cases, first very rarely, only in

extreme cases ; then I grew bolder. My method is to first dry the dentine, apply carbolic acid, then apply Fowler's solution, or a solution of one per cent. arsenious acid. That is about what Fowler's solution contains,—four grains to the ounce. I let that remain in the dentine for from one to five minutes, very rarely more than two minutes. When it is desirable to remove pigmentary deposits upon the teeth, I bathe the parts with iodine. Some time ago Dr. Francis wrote an article on cleansing teeth, and I was strongly attracted to the efficiency of iodine for its cleansing influences. From that time I gave it much attention, and I find carbolized iodine destroys nearly all the accumulated matter upon the teeth or in the cavities, at the same time annihilating all germ life. In regard to using this small amount of arsenic, I have not had one case in which I can trace a pulp being destroyed, or where even pulpitis has followed the application.

APPOINTMENT.

Mr. John A. Gartley has been appointed honorary Dental Surgeon to the Ealing Home for Girls.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications : name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only ; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under :

Twelve Months (post free) - - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

I.—THE LICENSING CORPORATIONS.

Comparative Summary of Regulations for the Licence in Dental Surgery.

| | Royal College of Surgeons, England | Royal College of Surgeons, Edinburgh. | Faculty of Physicians and Surgeons, Glasgow. | Royal College of Surgeons, Ireland. |
|---|--|---|--|--|
| 1.—PRELIMINARY EXAMINATION..... | Compulsory on all who commenced their Professional Education after July 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W. | Compulsory on all who commenced their Professional Education after July 22, 1878. | Compulsory on all who commenced their Professional Education after August 1st, 1878. | All Examinations in General Education recognised by the General Medical Council. |
| 2.—Age at which the Candidate may present himself | Twenty-one. | Twenty-one. | Twenty-one. | Any age, but diploma cannot be granted until he is twenty-one. |
| 3.—DURATION OF PROFESSIONAL EDUCATION..... | Four years subsequent to registration. | Four years. | Four years. | Four years. |
| 4.—COURSES OF LECTURES, &c., to be attended at a recognized School :— | | | | |
| Anatomy | One course. | One Winter course. | One course of 6 months. | One course. |
| Physiology | Ditto. | One course of 6 months. | One course of 6 months. | One course. |
| Practical Physiology | Ditto. | ... | ... | One course. |
| Surgery | Ditto. | One Winter course. | One course of 6 months. | Ditto. |
| Medicine | Ditto. | Ditto. | Ditto. | Ditto. |

| Royal College of Surgeons, England. | Royal College of Surgeons, Edinburgh. | Faculty of Physicians and Surgeons, Glasgow. | Royal College of Surgeons, Ireland. |
|--|--|---|--|
| Chemistry..... | Instruction. | One course of 6 months. | One course. |
| Materia Medica | Instruction. | Ditto. 3 " | One course. |
| Dissections and Demon- strations | Twelve months. | Twelve months. | Two courses. |
| Practical Chemistry and Metallurgy | Instruction. | One course of 3 months. | 1 course. Three months. |
| Practice of Surgery | Two Winter Sessions. | One course of 6 months. | 1 course. Six months. |
| Clinical Lectures in Hos- pital | Two Winter Sessions. | Two courses of 12 months | One year. |
| Dental Anatomy and Phy- siology | Two courses. | 24 Lectures (Six months.) | One course. |
| Dental Surgery and Path- ology | Ditto. | 20 Lectures. | Two courses. |
| Metallurgy | ... | ... [trations | One course. |
| Dental Mechanics | One course. | Not less than 12 Demons- | Two courses. |
| Practical Instruction in Mechanical Dentistry... | Three years under a com- petent Practitioner, all of which may be pre- vious to Registration. | Three years under a Regis- tered Dental Practition- er. | Three Years under a Regis- tered Dentist. |
| Practice of Dental Surgery in a recognized Dental Hospital, or in the Dental Department of a recog- nized General Hospital | Two years. | Two years. | Two years. |
| 5—FEE | £10 10s. over and above the stamp duty. | £10 10s. for Candidates registered before Oct., '96, Candidates registered af- ter that date, £15 15s. | £21. |
| 6—LEAST period during which unsuccessful Can- didates are referred to their studies | Six months, subject to the decision of the Board. | Six months. | Three months. |

---PARTICULARS OF EXAMINATION

(A) *Written:*

On General Anatomy and Physiology, General Pathology and Surgery, Dental Anatomy and Physiology, and Dental Pathology and Surgery.

(B) *Practical.*

(1) On the treatment of Dental Caries, and may be required to prepare and fill cavities with Gold or Plastic filling or material, or to do any other operation in Dental Surgery.

(Candidates must provide their own instruments.)

(2) On the Mechanical and Surgical treatment of the various irregularities of children's teeth.

(3) On Mechanical Dentistry.

(C) *Oral.*

Comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings, &c.

May and November.

Candidates who reg. on or after Jan. 1, '97 are subject to new Regs., which can be obtained on application.

MR. F. G. HALLETT,
Examination Hall, Victoria Embankment, London, W.

8-DATES OF EXAMINATIONS

For further information apply to

Written and Oral:

First Part—Anatomy, Chemistry, Physiology.

Second Part—Surgery, Medicine, Therapeutics, and special subjects, of Dental Anatomy and Physiology, Dental Surgery & Pathology, and Dental Mechanics. Registered Medical Practitioners are examined on the special subjects only. Practical Examination given in a Dental Hospital in Dental Surgery, Pathology & Mechanics.

First examination.—

Tuesday, April 27, 1897,
Monday, July 26, 1897.

Second exam. on Thursday following.

JAS. ROBERTSON, Solicitor,
Clerk of College,
1, George Square, Edin.

Written, Oral & Practical:
1st part—Anatomy, Physiology, Chemistry, and Metallurgy.

Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects.

Practical Examination at a Dental Hospital. Candidates are to bring Excavator, Files, and Plugging Instruments.

Also practical Examination in Mechanical Dentistry.

1896 October 6—10.
1897 April 6—10.

ALEX. DUNCAN, Esq.,
Faculty of Physicians
and Surgeons,
Glasgow.

Written and Oral:
On all the subjects of the Curriculum.

Dental Surgery, and Dental Mechanics.

SINE CURRICULO:—

Candidates in practice before July, 1878, and whose names are on a Dental Register are admitted to the examination *Sine Curriculo*. Fee £26 5s.

Feb. May & Nov.

The Registrar,
Royal College of
Surgeons, Dublin.

II. PRELIMINARY EXAMINATION.

REGULATIONS OF THE GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed (at one or more Examinations) a preliminary Examination in the subjects of General Education as specified in the following List :—

- (a) English Language, including Grammar and Composition.
- (b) Latin, including Grammar, Translation from specified authors, and translation of easy passages not taken from such authors.
- (c) Mathematics, comprising (a) Arithmetic ; (b) Algebra, as far as Simple Equations, inclusive ; (c) Geometry, the subject matter of Euclid, Books I., II., and III., with easy deductions.
- (d) One of the following optional subjects :—
 (a) Greek, (b) French, (c) German, (d) Italian, (e) any other Modern Language, (f) Logic.

List of Examining Bodies whose Examinations in General Education are recognized by the Medical Council as qualifying for registration as Medical or Dental Student.

I. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD :—

1. Junior Local Examinations ; (Certificate to include all the required subjects at one time.)
2. Senior Local Examinations (Certificates to include the required subjects.)
3. Responsions (Certificate to be supplemented by others showing that the required mathematical subjects have been passed in).
4. Moderations (Certificates to include the required subjects.)
5. Final Examination for a degree in Arts.

UNIVERSITY OF CAMBRIDGE :—

6. Junior Local Examinations : (Certificate to include all the required subjects at one time.)
7. Senior Local Examinations ; (Certificates to include the required subjects.)
8. Higher Local Examinations (Certificates to include the required subjects).
9. Previous Examination (Certificates to include the required subjects).
10. General Examination (Certificates to include the required subjects.)
11. Final Examination for a Degree in Arts.

UNIVERSITY OF DURHAM :—

12. Examination for Certificate of Proficiency (Certificate to include all the required subjects at one time).
13. Preliminary Examination in Arts for Graduation in Medicine and Science (Certificate to include the required subjects).
14. Final Examination for a Degree in Arts.

UNIVERSITY OF LONDON:—

15. Matriculation Examination (Certificate to include the required subjects).
16. Final Examination for a Degree in Arts or Science.

VICTORIA UNIVERSITY:—

17. Preliminary Examination (Certificate to include all the required subjects at one time).
18. Entrance Examination in Arts, (Certificate to include all the required subjects at one time).
19. Final Examination for a Degree in Arts or Science.

UNIVERSITY OF WALES:—

20. Matriculation Examination (Certificate to include all the required subjects at one time).
21. Final Examination for a Degree in Arts.

UNIVERSITY OF EDINBURGH:—

22. Junior Local Examination (Certificate to include all the required subjects at one time).
23. Senior Local Examination (Certificates to include the required subjects).
24. Preliminary Examination for graduation in Medicine and Surgery (Certificate to include the required subjects).
25. Preliminary Examination for Graduation in Arts or Science (Certificate to include the required subjects).
26. Final Examination for a Degree in Arts or Science.

UNIVERSITY OF ABERDEEN:—

27. Junior Local Examination (Certificate to include all the required subjects at one time).
28. Senior Local Examination (Certificates to include the required subjects).
29. Preliminary Examination for Graduation in Medicine and Surgery (Certificate to include the required subjects).
30. Preliminary Examination for Graduation in Arts or Science (Certificate to include the required subjects).
31. Final Examination for a Degree in Arts or Science.

UNIVERSITY OF GLASGOW:—

32. Preliminary Examination for graduation in Medicine and Surgery (Certificate to include the required subjects).
33. Preliminary Examination for Graduation in Arts or Science (Certificate to include the required subjects).
34. Final Examination for a Degree in Arts or Science.

UNIVERSITY OF ST. ANDREWS:—

35. Preliminary Examination for graduation in Medicine and Surgery (Certificate to include the required subjects).
36. Preliminary Examination for Graduation in Arts or Science (Certificate to include the required subjects).
37. Final Examination for a Degree in Arts or Science.
38. Final Examination for the Diploma of L.L.A.

UNIVERSITY OF DUBLIN.

39. Public Entrance Examination. (Certificate to include the required subjects).
40. Examination for the First, Second, Third, or Fourth Year in Arts (Certificate to be signed in the approved form by the Medical Registrar of the University).
41. Final Examination for a Degree in Arts.

ROYAL UNIVERSITY OF IRELAND:—

42. Matriculation Examination (Certificate to include the required subjects).
43. Final Examination for a Degree in Arts or Science.

OXFORD AND CAMBRIDGE SCHOOLS' EXAMINATION BOARD:—

44. Lower Certificate (to include all the required subjects at one time.)
45. Higher Certificate (to include the required subjects).

II.—MEDICAL LICENSING BODIES.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS IN IRELAND.—

- *46. Preliminary Examination (Certificate to include all the required subjects at one time).

III.—EDUCATIONAL BODIES OTHER THAN UNIVERSITIES.

COLLEGE OF PRECEPTORS:—

47. Examination, comprising all the subjects, passed at the same time, required by the Council.
- * * Each Student to present a Certificate that this has been done, signed by the Secretary of the College.

SCOTCH EDUCATION DEPARTMENT:—

48. Examination for Lower Grade Leaving Certificate (to include all the required subjects at one time.)
49. Examinations for Higher Grade or Honours Leaving Certificate (to include the required subjects).

EDUCATIONAL INSTITUTE OF SCOTLAND:—

50. Preliminary Medical Examination (Certificate to include all the required subjects at one time).

INTERMEDIATE EDUCATION BOARD OF IRELAND:—

51. Junior or Middle Grade Examination (Certificate to include all the required subjects at one time).
52. Senior Grade Examination (Certificate to include the required subjects).

* The Council has recommended that this Examination be discontinued.

IV.—INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

* * (a) No Certificate from the Bodies in the foregoing Section (iv.) will be accepted after October 1, 1895, unless it shows that the Examination has been conducted by or under the authority of the Body granting it, includes all the subjects required by the GENERAL MEDICAL COUNCIL, and states that all the subjects of Examination have been passed in at one time; and copies of the form of the required Certificate will be supplied by the REGISTRAR of the COUNCIL for the purpose.

(b) In the case of Natives of India or other oriental countries, whose vernacular is other than English, an Examination in a classic oriental language may be accepted instead of an Examination in Latin.

REGISTRATION OF DENTAL STUDENTS.

Every Dental Student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No Dental Student shall be registered until he has passed a Preliminary Examination, as required by the General Medical Council, and has produced evidence that he has commenced Dental Study.

The commencement of the course of Professional Study recognised by any of the Qualifying Bodies may commence by pupilage with a Registered Dental Practitioner.

Every person desirous of being registered as a Student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to the prescribed form, which may be had on application to the several Qualifying Bodies, Dental Schools, and Hospitals; and shall produce or forward to the Branch Registrar a Certificate of his having passed a Preliminary Examination, as required by the General Medical Council, and evidence that he has commenced Dental Study.

Students who commenced their professional education by apprenticeship to Dentists entitled to be registered, or by attendance upon professional lectures before July 22nd, 1878, (when Dental Education became compulsory,) shall not be required to produce evidence of having passed a Preliminary Examination.

Candidates for a Diploma in Dental Surgery shall produce certificates of having been engaged during four years in Professional Studies, and of having received three years' instruction in Mechanical Dentistry from a registered Practitioner.

One year's *bona fide* apprenticeship with a registered Dental Practitioner, after being registered as a Dental Student, may be counted as one of the four years of professional Study.

The three years of instruction in Mechanical Dentistry, or any part of them, may be taken by the Dental Student either before or after his registration as a Student; but no year of such mechanical instruction shall be counted as one of the four years of Professional Study unless taken after registration.

III. EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON, AND LONDON
SCHOOL OF DENTAL SURGERY,
LEICESTER SQUARE.

DENTAL AND MEDICAL OFFICERS.

Consulting Physician :—

Sir RICHARD QUAIN, Bart., F.R.S., M.D., F.R.C.P., LL.D.

*Consulting Surgeon—*CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeons:—

T. ARNOLD ROGERS, M.R.C.S., L.D.S.

J. SMITH TURNER, M.R.C.S., L.D.S.

Dental Surgeons.

STORER BENNETT, L.R.C.P., F.R.C.S., L.D.S.

C. E. TRUMAN, M.A. Cantab., M.R.C.S., L.D.S.

LEONARD MATHESON, L.D.S.

E. LLOYD WILLIAMS, M.R.C.S., L.R.C.P., L.D.S., L.S.A.

W. B. PATERSON, F.R.C.S., L.D.S.

W. H. WOODRUFF, L.D.S.

Assistant Dental Surgeons.

A. CLAYTON WOODHOUSE, M.R.C.S., L.D.S.

J. F. COLYER, M.R.C.S., L.R.C.P., L.D.S.

C. F. RILOT, M.R.C.S., L.D.S.

H. BALDWIN, M.R.C.S., L.D.S.

H. LLOYD WILLIAMS, M.R.C.S., L.D.S.

W. H. DOLAMORE, L.R.C.P., M.R.C.S., L.D.S.

PERCY SMITH, L.R.C.P., M.R.C.S., L.D.S.

G. HERN, L.R.C.P., M.R.C.S., L.D.S.

J. G. TURNER, L.R.C.P., F.R.C.S., L.D.S.

RUSSELL BARRETT, L.R.C.P., M.R.C.S., L.D.S.

ASHLEY DENSHAM, L.R.C.P., M.R.C.S., L.D.S.

Anæsthetists.

W. DUDLEY BUXTON, M.D., B.S. Lond., M.R.C.P. Lond.

FREDERIC W. HEWITT, B.A., M.D. Cantab.

CARTER BRAINE, F.R.C.S.

HENRY DAVIS, M.R.C.S., L.S.A.

Assistant Anæsthetists.

GEORGE ROWELL, F.R.C.S.

E. A. BRIDGER, M.D.

R. T. BAKEWELL, M.B. Lond., L.R.C.P., M.R.C.S.

H. HILLIARD, L.R.C.P., M.R.C.S.

Demonstrators.

N. J. BENNETT, L.D.S.

H. J. STEVENS, L.D.S.

D. P. GARELL, L.R.C.P., M.R.C.S., L.D.S.

W. S. NOWELL, M.D. Oxon., L.D.S.

Medical Tutor—W. H. DOLAMORE, M.R.C.S., L.R.C.P., L.D.S.*Curator of Mechanical Laboratory.*

E. W. FLETCHER.

Demonstrations.—Demonstrations will be given every morning during the early part of each Session ; and at the end of the Course those Gentlemen who have attended the Demonstrations to the satisfaction of the Staff, will be permitted to perform operations at the Hospital under the supervision of the Medical Officers and the House Surgeon.

Dresserships for Cases of Extraction.—The appointments are held for one month, and consist of six senior Dresserships for extractions under anæsthetics and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this Hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the General Hospitals.

A new Mechanical Laboratory has been fitted up and opened in which Demonstrations are given by the Lecturer on Mechanical Dentistry, on Continuous Gum Work, Making Obturators, and the Mechanical Treatment of Acquired and Congenital Cleft Palate, Pivoting, Bridge and Bar Work, &c., and the Students are enabled to make plates for the treatment of Irregularities and of Cleft Palate.

The Hospital is lighted throughout by electricity. The New Mechanical Laboratory is now open. The Laboratory is carefully fitted with all the requirements of a modern Dental Laboratory, and is lighted with Electric Light for foggy weather. Each bench is also well lighted by daylight. The workroom is under the superintendence of A. J. WATTS, L.D.S.I., who will attend daily from 9 a.m. to 6 p.m. to give practical instructions to students.

The WINTER SESSION will commence on October 1st, 1896.

The SUMMER SESSION will commence 1st May, 1897.

LECTURES.

Dental Surgery and Pathology.—Mr. STORER BENNETT.

Dental Anatomy and Physiology (Human and Comparative).—

Mr. CHARLES TOMES, F.R.S.

Mechanics of Dentistry.—Mr. E. LLOYD WILLIAMS.

Metallurgy in its application to Dental Purposes.—Dr. FORSTER MORLEY.

MEDICAL TUTOR.

The Medical Tutor attends four days in the week, from 5 to 7 p.m., for two months previous to the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons ; generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

Fee for the Special Lectures and Hospital Practice required by the Curriculum, £50 in one payment, or 50 Guineas in two yearly instalments.

An extra fee of seven guineas will be payable for every extra six months' Hospital Practice.

All fees are payable on day of entry.

FEES FOR SINGLE COURSES.

| | | | | | £ | s. | d. |
|--------------------------------|-------------|-----|-----|-----|---|----|----|
| Dental Anatomy and Physiology, | One Course | ... | ... | ... | 5 | 5 | 0 |
| | Two Courses | ... | ... | ... | 8 | 8 | 0 |
| Dental Surgery, | One Course | ... | ... | ... | 5 | 5 | 0 |
| | Two Courses | ... | ... | ... | 8 | 8 | 0 |
| Dental Mechanics, | One Course | ... | ... | ... | 5 | 5 | 0 |
| | Two Courses | ... | ... | ... | 8 | 8 | 0 |
| Metallurgy, | One Course | ... | ... | ... | 5 | 5 | 0 |
| | Two Courses | ... | ... | ... | 8 | 8 | 0 |

Qualified Medical Men or Gentlemen holding Foreign Diplomas to practise in their native country, can receive six months' practical instruction in the Hospital, fee 20 guineas.

The Medical Committee reserve to themselves the right to refuse any such candidates' application.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same, the proximate cost of which is £25; a list can be had on application, but "The Kit" has been very carefully selected with a view to efficiency, and is well adapted for use in future practice.

Further particulars may be obtained on application to the Dean, who attends at the Hospital every Wednesday from 10 a.m. to 12 noon.

PRIZES.

The Prize-day is held in July.

1. A Scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded at the close of each Summer Session.

2. Prizes are awarded by the Lecturer for the best examinations in the subjects in their respective courses, at the end of the Summer and Winter Sessions.

3. Prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

4. A prize of the value of five guineas is also given by Messrs. Ash & Sons for the best essay on a surgical subject connected with the mouth.

Note.—The Medical Committee have resolved "that the holder of the Saunders Scholarship be admitted without additional fee to the extra year of Hospital Practice."

The Dean requests that all communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 28th to Oct. 3rd inclusive, from 5 till 6 o'clock, and on Wednesday mornings from 10.30 till 12.

NATIONAL DENTAL HOSPITAL AND COLLEGE,
GREAT PORTLAND STREET, W.

FOUNDED 1861.

HOSPITAL STAFF.

Consulting Physicians.

Sir W. H. BROADBENT, Bart., M.D., F.R.C.P.

Sir B. W. RICHARDSON, M.A., M.D., F.R.S.

Consulting Surgeons.

SIR SPENCER WELLS, Bart., F.R.C.S. ; CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeon.

SIR EDWIN SAUNDERS, F.R.C.S.

Hon. Visiting Physician.

JAMES MAUGHAN, M.D.

Hon. Visiting Surgeon.

E. W. ROUGHTON, F.R.C.S. Etc.

Dental Surgeons.

| | | |
|-----------|-----|--|
| Monday | ... | F. HENRI WEISS, L.D.S. Eng. |
| Tuesday | ... | ALFRED SMITH, L.D.S. Eng. |
| Wednesday | ... | MARCUS DAVIS, L.D.S. Eng. |
| Thursday | ... | T. G. READ, L.D.S. Eng. D.M.D. |
| Friday | ... | W. RUSHTON, L.D.S. Eng. |
| Saturday | ... | C.W. GLASSINGTON, M.R.C.S., L.D.S. Edin. |

Assistant Dental Surgeons.

| | | |
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| Monday | ... | WILLOUGHBY WEISS, L.D.S. Eng. |
| Tuesday | ... | EDGAR BEVERLEY, L.D.S. Eng. |
| Wednesday | ... | SIBLEY W. READ, L.D.S. Eng. |
| Thursday | ... | J. W. PARE, M.D., L.D.S. Eng. |
| Friday | ... | W. H. WHEATLEY, L.D.S. Eng. |
| Saturday | ... | H. J. RELPH, L.D.S. Eng. |

Anæsthetists.

| | | |
|-----------|-----|-------------------------------------|
| Monday | ... | G. B. FLUX, M.D. |
| Tuesday | ... | C. H. COZENS, M.R.C.S., L.R.C.P. |
| Wednesday | ... | C. J. OGLE, M.R.C.S., L.S.A. |
| Thursday | ... | G. EVERETT NORTON, M.R.C.S., L.S.A. |
| Friday | ... | JAMES MAUGHAN, M.D. |
| Saturday | ... | HAROLD LOW, M.A., M.B. Camb. |

Demonstrator—PHILIP HARRISON, L.D.S. Eng.

House Surgeons.

W. E. HILL, L.D.S. Eng. ; J. MULLORD, L.D.S. Eng.

LECTURERS.

- Dental Anatomy and Physiology*—J. W. PARE, M.D. Edin., L.D.S. Eng.
Dental Surgery and Pathology—A. HOPEWELL SMITH, M.R.C.S., L.R.C.P.,
Dental Mechanics—HARRY ROSE, L.D.S. Eng. [L.D.S. Eng.
Dental Metallurgy—W. LAPRAIK, Ph.D., F.I.C., F.C.S.
Surgery of the Mouth—E. W. ROUGHTON, M.D. Lond. F.R.C.S. Eng.
Operative Dental Surgery—GEO. CUNNINGHAM, M.A., L.D.S. Eng., D.M.D.
Dental Materia Medica—CHAS. W. GLASSINGTON, M.R.C.S., L.D.S. Edin.
Elements of Histology—J. MAUGHAN, M.D.

At present the Hospital is open for the reception of patients every week-day, from 9 o'clock till 11 o'clock a.m., and on Thursday afternoon. Work is continued till 2 o'clock p.m.

The accommodation and fittings are in accordance with the latest requirements for efficient teaching in all branches of the Science and Art of Dental Surgery.

The Conservation Room, with space for sixty chairs, is well lighted and warmed and ventilated after approved methods.

Other large rooms are arranged as a Mechanical Laboratory, Special Demonstration Room, Students' Common Room, &c.

There are also a Metallurgical Laboratory, Library and Museum. The Waiting Rooms, Extraction Rooms and Lecture Hall are on the ground floor.

The building is lighted throughout by electricity, and there is also a current for motors in the Stopping Room.

Each Student on entering the School passes through a preliminary course under the care of a Demonstrator, and all the members of the Staff take part in chair-side teaching, besides giving special demonstrations.

Dresserships in the Extraction Rooms.

These appointments are re-arranged every two months. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice ; and they will be under the direction of the Dental Surgeons of the day, and of the House Surgeon.

Clinical Lectures and Demonstrations.

Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest ; and also demonstrations upon the preparing and filling of cavities and other operations upon the teeth and contiguous parts.

The Hon. Visiting Physician and Surgeon give Demonstrations weekly, on cases of Oral Surgery, Anæsthetics, Cardiac, and Pulmonary lesions, and a member of the anæsthetic staff gives a course of lectures.

Attendance and Examination of Students.

A register is kept of the attendance of students at the Hospital Practice and lectures. An attendance of full two years at Hospital practice is required by the College of Surgeons of England ; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses, to test the progress and attention of the pupils ; and at the end of each course of lectures a written examination is held, in accordance with the requirements of the College of Surgeons. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held to prepare for the final examinations, students who have, at this school, complied with the Dental portion of the Curriculum.

A proposal is under consideration for admitting a limited number of pupils to the Mechanical Laboratory for the three years' training.

LECTURES.

WINTER SESSION, COMMENCING ON THURSDAY, OCT. 1st, 1896.

Dental Anatomy and Physiology, by J. W. Pare, M.D. Edin., L.D.S.E. On Tuesdays and Thursdays, at 5 p.m., during October, November, and December.

Operative Dental Surgery, by George Cunningham, M.A., D.M.D., L.D.S. Eng. On Mondays, at 6 p.m., during October, November and December, (Free to Students of the Hospital and College.)

Dental Materia Medica and Therapeutics, by Charles W. Glassington, M.R.C.S., L.D.S. Edin. On Tuesdays, at 7.30 p.m. during October, November and December. (Free to Students of the College).

Dental Metallurgy, by W. Lapraik, Ph. D., F.I.C., F.C.S. On Tuesdays, at 7.30 p.m., during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S. Eng. On Mondays at 7 p.m., during January, February and March.

SUMMER SESSION, 1897.

Dental Surgery and Pathology. By A. HOPEWELL SMITH, L.R.C.P., M.R.C.S., L.D.S. Eng. On Mondays and Thursdays, at 6 p.m., during May, June, and July.

Elements of Histology, by James Maughan, M.D., L.R.C.P., M.R.C.S. On Mondays and Thursdays, at 5 p.m., during May, June, and July. (Free to students of the College.)

FEEs.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Fee for the two years' Hospital Practice required by the Curriculum, £15 15s.

* * This scale of Fees only holds good until Oct. 1st, 1896, when they will be raised to 40 and 20 guineas respectively.

PRIZES.

An Entrance Exhibition of the value of £15 is open for competition at the commencement of each Summer and Winter Session, after an Examination in the following Subjects:—

Physiology. (The Functions of Respiration, Circulation and Digestion.) Examiner—JAMES MAUGHAN, M.D.

Osteology. (Bones of the head.) Examiner—E. W. ROUGHTON, F.R.C.S.

Chemistry. Examiner—WM. LAPRAIK, Ph.D., F.I.C., F.C.S.

Dental Mechanics. (Theoretical and Practical). Examiners—HARRY ROSE, L.D.S. Eng., W. R. HUMBY, L.D.S., Eng.

Six Prizes in Medals, are open for competition among the students of the Colleges, at the end of each Course of Lectures, on the following subjects, viz., Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, Operative Dental Surgery, and Dental Materia Medica.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The Rymer Gold Medal for General Proficiency, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rymer Medal, the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental Curriculum.

The Ash Prize, value £3 3s. in cash for the best Thesis on a subject in Dental Surgery.

The Dean attends the Hospital on Tuesday mornings at 11 a.m.

The public Distribution of Prizes will take place during the Winter Session

SIDNEY SPOKES, M.R.C.S., L.D.S. Eng., *Dean*.

GUY'S HOSPITAL DENTAL SCHOOL.

The Winter Session will begin on October 1st, and end on March 31st.

THE STAFF OF THE DENTAL SCHOOL.

Dental Surgeons.

F. NEWLAND-PEDLEY, F.R.C.S., L.D.S. Eng.
W. A. MAGGS, L.R.C.P., M.R.C.S., L.D.S. Eng.
J. H. BADCOCK, L.R.C.P., M.R.C.S., L.D.S. Eng.

Assistant Dental Surgeons.

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|--|--|
| R. WYNNE ROUW, L.R.C.P., M.R.C.S., L.D.S.E. | A. E. BAKER, L.R.C.P., M.R.C.S., L.D.S.E. |
| H. L. PILLIN, L.D.S.E. | M. F. HOPSON, L.D.S.E. |

Demonstrators in Practical Dentistry.

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| J. B. PARFITT, L.R.C.P., M.R.C.S., L.D.S. Eng. | J. L. PAYNE, L.D.S. Eng. E. C. DIMOCK, L.D.S. Eng. |
| W. R. WOOD, L.D.S. Eng. | |

Anæsthetists.

| | |
|------------------------|-------------------------------|
| J. F. W. SILK, M.D. | W. J. SCOTT, M.B., B.S. |
| F. W. COCK, M.D., M.S. | C. J. OGLE, M.R.C.S., L.S.A. |
| H. F. LANCASTER, M.D. | E. T. E. HAMILTON, M.D., M.S. |

LECTURES AND DEMONSTRATIONS.

WINTER SESSION.

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|--|---------------------|
| <i>Dental Surgery</i> ... | MR. NEWLAND-PEDLEY. |
| <i>Dental Anatomy and Physiology</i> ... | MR. MAGGS. |
| <i>Metallurgy</i> ... | MR. GROVES, F.R.S. |

SUMMER SESSION.

| | |
|---|-----------------|
| <i>Operative Dental Surgery</i> ... | MR. BADCOCK. |
| <i>Dental Mechanics</i> ... | MR. WYNNE ROUW. |
| <i>Dental Microscopy</i> ... | MR. BAKER. |
| <i>Demonstrator of Dental Mechanics</i> | MR. PILLIN. |

An Open Entrance Scholarship in Arts, of the value of £30, is offered for competition annually in the month of September. All particulars relating to the examination may be obtained upon application to the Dean.

Three Prizes, of the aggregate value of £35, are awarded annually.

Appointments. The following appointments are allotted to Dental Students according to merit ; Three Dental House-Surgeons, two Assistant Dental House-Surgeons, one Assistant Demonstrator of Dental Microscopy, and six Demonstrators in the Conservation Room.

The connection of this School with Guy's Hospital Medical School enables Candidates for the L.D.S. Eng., to obtain at one institution the entire curriculum required by the Examining Board, an advantage which cannot be obtained elsewhere in London.

Preparation Classes are held before each examination in both the Special and the General Subjects of the curriculum.

A Prospectus, containing full particulars as to Fees, Lectures, Course of Study advised, the Residential College, &c., may be obtained on application to the Dean.

Dr. LAURISTON SHAW, Guy's Hospital, S.E.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER, DEVONSHIRE STREET, ALL SAINTS.

Consulting Physicians :

HENRY SIMPSON, M.D., M.R.C.S. | D. J. LEECH, M.D., F.R.C.P.

Consulting Surgeons :

E. LUND, F.R.C.S. | T. JONES, F.R.C.S.
F. A. HEATH, M.R.C.S. | J. HARDIE, F.R.C.S.

Consulting Dental Surgeons.

H. CAMPION, M.R.C.S. | G. W. SMITH, M.R.C.S.

Dental Surgeons.

Monday Morning I. RENSCHAW, L.D.S.I. ; D. HEADRIDGE, L.D.S. Eng.
Monday Evening W. HEADRIDGE, L.D.S.I. ; L. DRESCHFELD, L.D.S.I.
Tuesday Morning T. TANNER, L.D.S. Eng. ; G. O. WHITTAKER, L.D.S. Eng.
Wednesday Morning P. A. LINNELL, L.D.S. Eng. ; F. W. MINSHALL, L.D.S.I.
Wednesday Evening W. A. HOOTON, L.D.S. Eng.
Thursday Morning H. T. DRESCHFELD, L.D.S. ; E. P. COLLETT, L.D.S. Eng.
Friday Morning ... G. G. CAMPION, L.D.S. Eng. ; W. SIMMS, L.D.S.I.
Friday Evening ... W. DYKES, L.D.S. Glas. ; C. H. SMALE, L.D.S.E.
Saturday Morning J. W. DUNKERLEY, L.D.S.I. ; W. SMITHARD, L.D.S.I.

Administrator of Anæsthetics.

Monday Morning ALEXANDER WILSON, F.R.C.S.
Wednesday Morning J. PRINCE STALLARD, M.B.
Saturday Morning ALEXANDER WILSON, F.R.C.S.

Demonstrator.

T. E. SHERRATT, L.D.S. Eng.

House Dental Surgeon.

E. F. B. BEYER.

Preliminary Instruction.

During the first six months at the Hospital, new students are taken by the Demonstrator through a very complete course of practical instruction in all branches of operative dentistry. This course includes the actual preparation and filling of cavities out of, and in the mouth, the treatment of the different pathological conditions of the dental pulp, the treatment and filling of root canals, and the different methods of crowning.

A special course of demonstrations is given to more advanced students by the Lecturer on Operative Dentistry, and other demonstrations are given periodically by the dental staff.

Prizes.—The Fletcher prizes are awarded annually—in July. They consist of a first prize, value £8, for second year's men, and a second prize, value £2, for first year's men. The Matheson Operating Prize, value £3 3s. A prize, value £2 2s. is given by Messrs. Ash & Sons for the best essay on some subject in general surgery in connection with the teeth. This prize is awarded in July. Two prizes, value one guinea and two guineas are offered respectively to first and second year's men, for proficiency in the

extraction of teeth. A prize, value 2 guineas, for the best Regulating Case treated during the year.

FEES.—The Fee for the 2 years' Dental Hospital Practice required by the College of Surgeons of England is £12 12s., which must be paid in advance.

A prospectus containing full information may be had on application to—

GEORGE G. CAMPION, Dean.

THE OWENS COLLEGE, MANCHESTER.

Principal.—A. W. WARD, LITT., D., LL.D.

Dean of the Department of Medicine.—Professor ALFRED H. YOUNG, M.B.,
F.R.C.S.

DENTAL DEPARTMENT.

PROFESSORS AND LECTURERS.

Anatomy, Descriptive and Practical.—Professor ALFRED H. YOUNG, M.B., F.R.C.S.

Physiology.—Brackenbury Professor WM. STIRLING, M.D., D.Sc.

Chemistry.—Professor HAROLD B. DIXON, M.A., F.R.S.

Organic Chemistry.—Professor W. H. PERKIN, Ph. D., F.R.S.

Materia Medica and Therapeutics.—Professor D. J. LEECH, M.D., F.R.C.P.

Medicine.—Professor J. DRESCHFELD, M.D., F.R.C.P.

Surgery.—Professor THOMAS JONES, M.B., F.R.C.S.

Clinical Surgery.—Professor WALTER WHITEHEAD, F.R.C.S.E., F.R.S.E.

Dental Surgery.—Lecturer, G. G. CAMPION, L.D.S.

Operative Dentistry.—Lecturer, G. O. WHITTAKER, L.D.S.

Dental Anatomy and Physiology.—Lecturer, W. A. HOOTON, L.D.S., L.R.C.P.,
M.R.C.S.

Dental Mechanics.—Lecturer, THOMAS TANNER, L.D.S.

Dental Metallurgy.—Lecturer, C. A. BURGHARDT, Ph. D.

Dental Pathology and Histology.—Demonstrator, DAVID HEADRIDGE, L.D.S.

The Dental Department forms an integral part of the Department of Medicine, and with the Manchester Royal Infirmary and the Victoria Dental Hospital affords the fullest opportunities for study to students preparing for any of the Dental Examinations.

In addition to the ordinary Dental Lectures required by the Licensing Bodies, a course on Operative Dentistry is given during the Summer Session, and these are supplemented by a series of Practical Demonstrations given by the Lecturer at the Victoria Dental Hospital.

There is also a special Course of Demonstrations in Dental Histology and Pathology, in which Students are enabled to mount for themselves Microscopic Specimens illustrating these subjects.

PRIZES.—Prizes or Medals and Certificates are awarded in all the classes on the results of the several examinations.

Special Prizes are also awarded at the Victoria Dental Hospital.

The WINTER SESSION commences on October 2nd.

Prospectuses will be forwarded on application.

SYDNEY CHAFFERS., Registrar.

LIVERPOOL.

DENTAL HOSPITAL, MOUNT PLEASANT.

Consulting Physician—THOMAS ROBINSON GLYNN, M.D., M.R.C.P., Lond.

Consulting Surgeon—FRANK T. PAUL, F.R.C.S. Eng.

Consulting Dental Surgeons.

C. ALDER, L.D.S.

W. H. WAITE, L.D.S., D.D.S.

H. C. QUINBY, L.D.S., D.D.S.

Honorary Dental Surgeons.

R. M. CAPON, L.D.S. Glasgow,

THOS. MANSELL, L.D.S. Edin.

R. H. BATES, L.D.S. Eng.

W. H. GILMOUR, L.D.S. Eng.

E. A. COUNCELL, L.D.S. Eng.

J. P. ROBERTS, L.D.S. Ed.

R. EDWARDS, M.R.C.S., L.D.S. Eng.

M. ALEXANDER, L.D.S.I.

FREDERICK ROSE, L.D.S. Eng.

C. A. BARSTOW, L.D.S. Eng.

W. MAPPLEBECK, L.D.S.I.

Demonstrator of Operative Dental Surgery.

L. J. OSBORN, L.D.S. Eng.

Anæsthetist.—J. G. GEMMELL, M.B., C.M.

House Surgeon.

A. P. NIXON, L.D.S. Eng.

Assistant House Surgeon.

C. J. ANDERSON.

Curator of Workroom.

A. P. NIXON, L.D.S. Eng.

Dean—R. EDWARDS, M.R.C.S., L.D.S. Eng.

This Hospital is a school of Practical Dental Surgery, duly recognised by the Royal College of Surgeons, and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open, daily, for the admission of patients from 9 till 11 a.m., and from 6.30 to 8 p.m., except on Saturday.

Fees for Hospital Practice. £12 12s. for two years' Hospital Practice required for the curriculum. £15 15s. perpetual.

Further information may be obtained by applying to the Dean.

BIRMINGHAM.

MASON COLLEGE, (WITH QUEEN'S FACULTY OF MEDICINE.)

Principal Professor R. S. HEATH, M.A., D.Sc.

Dean of the Queen's Faculty ... Professor WINDLE, M.A., M.D., D.Sc.

Hon. Sec. Dental Department—Mr. JOHN HUMPHREYS, L.D.S.I., F.L.S.

DENTAL DEPARTMENT.

Professors and Lecturers.

Anatomy—Professor BERTRAM C. A. WINDLE, M.A., M.D., D.Sc.

Physiology—Professor F. J. ALLEN, M.A., M.D.

Chemistry—Professor PERCY F. FRANKLAND, Ph.D., B.Sc., F.R.S.

Medicine { Professor C. W. SUCKLING, M.D., M.R.C.P.

{ Professor R. SAUNDBY, M.D., F.R.C.P.

Surgery { Professor BENNETT MAY, B.S., F.R.C.S.
 { Professor G. BARLING, B.S., F.R.C.S.

Materia Medica—DENCER WHITTLES, L.D.S.

Dental Surgery—F. HUXLEY, M.R.C.S., L.D.S.

Dental Anatomy—J. HUMPHREYS, L.D.S.I., F.L.S.

Dental Mechanics—F. H. GOFFE, L.D.S.

Dental Metallurgy { Professor FRANKLAND.
 { W. G. MACMILLAN, F.I.C.

Surgical Diseases of the Mouth—F. MARSH, F.R.C.S.

Medical Diseases of the Mouth—STACEY WILSON, M.D., M.R.C.P.

Demonstrators.

Operative Dental Surgery—W. T. MADIN, L.D.S.

Mechanical Dentistry—F. R. HOWARD, L.D.S.

Dental Pathology—J. D. WHITTLES, L.D.S.

Special Courses

Of Lectures for Dental Students will be delivered on—

i. Syphilis and Surgical Diseases of the Mouth in their relation to Dentistry, by Frank Marsh, F.R.C.S., Surgeon to the Queen's Hospital.

ii. Diseases of the Mouth and of Digestion in their relation to Dentistry, by T. Stacey Wilson, M.D., M.R.C.P., Physician to the General Hospital.

The Department, in conjunction with the Dental, the General, and the Queen's Hospitals, provides the entire course of instruction required for the Diplomas in Dental Surgery of the Royal Colleges of Surgeons.

The College possesses a well equipped Dental Museum and Laboratory. An Entrance Scholarship, Medals, and Certificates in the classes are offered annually. At the Dental Hospital, particular stress is laid upon the teaching of all latest methods of conservative Dentistry, including the various modes of Gold Filling, and Crown and Bridge work.

For prospectuses, and further information, application should be made to JOHN HUMPHREYS, Esq., L.D.S.I., F.L.S. Hon. Sec., to the Department, 149, Edmund Street, or to

GEO. H. MORLEY, REGISTRAR.

BIRMINGHAM DENTAL HOSPITAL,

71, NEWHALL STREET.

OPEN DAILY AT NINE A.M.

Provides all the necessary practice for the L.D.S. Eng.

Hon. Consulting Physician—ROBERT M. SIMON, M.D.

Hon. Consulting Surgeon—JOHN ST. S. WILDERS, M.R.C.S.

Hon. Consulting Dentists :

ADAMS PARKER, L.D.S.

CHARLES SIMS, L.D.S.

Hon. Administrators of Anæsthetics:

S. W. HAYNES, M.B.

CYRIL HUTCHINSON, M.R.C.S.

J. HENRY BLAKENEY, M.R.C.S.

T. SYDNEY SHORT, M.B.

CHAS. ST. JOHNSTON, M.R.C.S., L.R.C.P.

A. T. POOLER, M.R.C.S.

Hon. Dental Surgeons :

| | |
|--------------------------------|-----------------------------|
| H. BREWARD NEALE, L.D.S. | J. HUMPHREYS, L.D.S. |
| F. E. HUXLEY, M.R.C.S., L.D.S. | F. W. RICHARDS, L.D.S. |
| F. H. GOFFE, L.D.S. | A. E. DONAGAN, B.A., L.D.S. |

Hon. Assistant Dental Surgeons :

| | |
|-----------------------|----------------------|
| F. R. HOWARD, L.D.S. | W. T. MADIN, L.D.S. |
| J. E. PARROTT, L.D.S. | J. MOUNTFORD, L.D.S. |
| P. T. NADEN, L.D.S. | |

House Surgeon :

J. H. MATTHEWS, L.D.S.

Demonstrators :

A. T. HILDER, L.D.S., & W. M. KNOTT, L.D.S.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the Staff on cases of particular interest ; also daily upon the preparing and filling of cavities, the insertion of porcelain inlays, pivoting teeth, adapting porcelain and metal crowns to broken down teeth.

The Demonstrators attend four days a week to instruct the Students. New Students are taken through a complete course for three months in the first principles of operative dentistry.

Dental Students are required to register their names for Hospital Practice with the Honorary Surgical Secretary, Mr. F. W. Richards, 27, Paradise Street, from whom further information may be obtained.

DEVON AND EXETER DENTAL HOSPITAL, EXETER.

President.

RICHARD LEY, Esq., J.P.

Honorary Treasurer.

J. M. ACKLAND, M.R.C.S., L.D.S. Eng.

Consulting Surgeons.

A. J. CUMMING, F.R.C.S. Eng.

JAMES BANKART, M.B. Lond., F.R.C.S. Eng.

Consulting Dental Surgeon.

S. BEVAN FOX, L.D.S. Eng.

Dental Surgeons.

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|---------------------------------|--------------------------------------|
| T. BROWNE-MASON, L.D.S. Eng. | J. M. ACKLAND, M.R.C.S., L.D.S. |
| HENRY BIGING MASON, L.D.S. Eng. | Eng. |
| T. G. T. GARLAND, L.D.S.I. | T.A. GOARD, L.R.C.P.Ld., L.D.S. Eng. |
| W. H. GOODMAN, L.D.S. Eng. | |

Surgeon Administrators of Anæsthetics.

JOHN MORTIMER, M.B. Lond., M.R.C.S. Eng.
 RUSSELL COOMBE, M.A. Cantab., F.R.C.S. Eng.

Honorary Secretary.

HENRY YEO.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

The Hospital is open daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils or any member of the Staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the Practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the Funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

PLYMOUTH DENTAL HOSPITAL,

BANK STREET CHAMBERS, BANK STREET, PLYMOUTH.

The Dentists attend each day, at 9 a.m. except Sundays.

Certificates of attendance on the practice of this Dental Hospital are recognized by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognizes the lectures delivered at the Hospital.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Members of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupils, on the payment of £1 is. per annum to the institution.

A Course of Lectures will—if a sufficient number of Students present themselves—be delivered during the year.

On "Dental Physiology, Dental Anatomy, Dental Mechanics."

Fee to Lectures, one Course, £7 7s.

Fee to Lectures, double Course, £12 12s. (required for Diploma.)

Fee to Dental Practice at Hospital £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma) 22 guineas.

E. A. BENNETT, Hon. Sec. and Treasurer.

EDINBURGH.

INCORPORATED EDINBURGH DENTAL HOSPITAL
AND SCHOOLS.*Consulting Medical Officers:*

Dr. ALEX. PEDDIE, F.R.C.P.E., Physician

Dr. JOSEPH BELL, F.R.C.S.E., Surgeon

Dr. JOHN SMITH, L.L.D., F.R.C.S.E., Surgeon-Dentist.

Dean—Mr. W. BOWMAN MACLEOD, L.D.S., 16, George Square.

Dental Surgeons.

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|-----------|-----|-----|-----|-----|---------------------------|
| Monday | ... | ... | ... | ... | Mr. J. G. MUNRO, L.D.S. |
| Tuesday | ... | ... | ... | ... | Mr. G. W. WATSON, L.D.S. |
| Wednesday | ... | ... | ... | ... | Mr. J. S. DURWARD, L.D.S. |
| Thursday | ... | ... | ... | ... | Mr. J.S. AMOORE, L.D.S. |
| Friday | ... | ... | ... | ... | Mr. JAMES MACKINTOSH. |
| Saturday | ... | ... | ... | ... | Mr. DAVID MONROE, L.D.S. |

Assistant Dental Surgeons.

| | | |
|-----------|------------------------------|---|
| Monday | Mr. H. B. EZARD, L.D.S., | Mr. J. ALEX. YOUNG, L.D.S. |
| Tuesday | Mr. R. N. HANNAH, L.D.S. ; | Mr. FRED. J. TURNBULL, L.R.C.P. & S., L.D.S. |
| Wednesday | Mr. T. GREGORY, L.D.S. ; | Mr. D. B. WILSON, L.D.S. |
| Thursday | Mr. ROBERT LINDSAY, L.D.S. ; | Mr. HUME PURDIE, L.D.S. |
| Friday | Mr. FRED PAGE, L.D.S. ; | Mr. J. MALCOLM, L.D.S. |
| Saturday | Mr. SEWELL SIMMONS, L.D.S. ; | Mr. T. A. MACKINTOSH, L.D.S. |

Chloroformists.

| | | | |
|-----------|-----|-----|-----------------------------------|
| Monday | ... | ... | Dr. R. J. JOHNSTON. |
| Tuesday | .. | ... | Dr. THOMAS PROUDFOOT. |
| Wednesday | ... | ... | Dr. WM. LUNDIE, B.Sc. |
| Thursday | ... | ... | Dr. G. MATHESON CULLEN. |
| Saturday | ... | ... | Mr. J. M. FARQUHARSON, M.B., C.M. |

Tutorial Dental Surgeon.

Mr. J. MORRIS STEWART, L.D.S.

Hospital Practice commences on 5th October.

DENTAL SCHOOL.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative) by ANDREW WILSON, L.D.S.—These Lectures will be delivered on the evenings of Tuesday and Friday, at 8 o'clock, commencing October, 1896. The Course consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical specimens, etc.

Dental Surgery and Pathology, by GEORGE W. WATSON, L.D.S.—These Lectures will be delivered on the mornings of Tuesday and Friday at 8 o'clock, during the Summer Session, commencing May, 1897. The course, consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, etc.

Mechanical Dentistry, by W. BOWMAN MACLEOD, L.D.S. The Lectures will commence November, 1896, at 8 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

In connection with the above a course of Lectures on Metallurgy will be given by JOHN E. MACKENZIE, Ph.D., B.Sc.

Practical Mechanics.—J. GRAHAM MUNROE, L.D.S.—In addition to the Systematic Lectures, there will be given during the Session, Demonstrations on Dental Mechanics, and each Student will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. Special facilities are afforded in the Mechanical Department; a large and fully equipped workroom under the charge and direction of a competent mechanic, having been set aside for the construction of dental appliances. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will be required to furnish their own hand tools.

Extra course of Lectures, Dental Materia Medica and Therapeutics, by WM. GUY, F.R.C.S., L.R.C.P., L.D.S. Gold Fillings, H. BYCROFT EZARD, L.D.S.

In the various classes prizes will be offered for competition.

General Fee for the Hospital Practice and special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry, £9 15s.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The Hospital Practice and Lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for the other Licensing Bodies. Second Courses of the Lectures as required by the Royal College of Surgeons of England, £2 4s.

For further information apply to the Dean, who will be found at the Hospital every Thursday morning between 9 and 10 o'clock.

THE SESSION 1896-7 OPENS OCTOBER 5th, 1896.

General Fee for the Hospital Practice and special Lectures required by the Curriculum.

| | | | |
|---|-----|----|------|
| Hospital Practice, Two Years..... | £15 | 15 | 0 |
| One Course of 24 Lectures in Dental Anatomy ... | } | 9 | 15 0 |
| " 22 " " Surgery ... | | | |
| " 12 " " Mechanics ... | | | |

Total.....£25 10 0

For further particulars, apply to the Dean, Chambers Street, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL,

5, ST. VINCENT STREET.

The Hospital is open daily except Saturday and Sunday, from 5 p.m. till 7 p.m.

The work of the Hospital is conducted as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session and attendance dated therefrom. Fee for the two years' practice required by the Curriculum, £15 15s. Fee for each course of Lectures, £3 3s.

DENTAL SCHOOL.

Dental Anatomy and Physiology, Human and Comparative, by W. WALLACE, M.A., M.B., L.D.S.

The Lectures will be delivered in the Summer Session, on the evenings of Tuesdays and Fridays, at 7 p.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text Book—Tomes, Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by J. M. McMILLAN, M.R.C.S., & P.Ed., L.D.S.

These Lectures are delivered on Tuesdays and Thursdays during the months of May and June, at 8 a.m., and will be illustrated by recent Specimens, and other Preparations and Drawings, &c. Text-books—Tomes, Manual of Dental Surgery; Salter's Dental Pathology and Surgery.

Mechanical Dentistry, by J. A. BIGGS, L.D.S.

This course will commence on the first Tuesday of November at 7 p.m., and will consist of 12 Lectures, with Practical Demonstrations in Dental Laboratory.

All communications on matters relating to the Dental School should be addressed to D. M. ALEXANDER, Solicitor, 97, West Regent Street, Glasgow, who will forward detailed Prospectus of the School.

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, EDINBURGH.

The Fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are the same as those for the Conjoint Examining Board, as Candidates for the L.R.C.S.E. require to be in possession of a recognised Diploma in Medicine.

The Secretary of the School is Mr. R. N. RAMSAY, 24, Forrest Road, Edinburgh, from whom the official Calendar may be had gratis.

DENTAL HOSPITAL OF IRELAND, LINCOLN PLACE, DUBLIN.

The WINTER SESSION will commence on Monday, October 12th, 1896.

The SUMMER SESSION will commence in May, 1897.

Consulting Physicians:

SIR F. R. CRUISE, M.D. | JOHN W. MOORE, M.D.

Consulting Surgeons:

E. H. BENNETT, M.D., F.R.C.S.I. | SIR W. STOKES, F.R.C.S.I.

Consulting Dental Surgeons:

R. H. MOORE, F.R.C.S.I. | DANIEL CORBETT, M.R.C.S.E.,
W. BOOTH PEARSALL, F.R.C.S.I. | L.D.S. Eng.

Dental Surgeons:

| | |
|-----------------------------------|-------------------------------------|
| ROBERT HAZELTON, F.R.C.S.I. | A. W. W. BAKER, M.D., F.R.C.S.I., |
| R. THEODORE STACK, M.D. | L.D.S.I. |
| F.R.C.S.I., D.M.D. (Harv.) | G. W. YEATES, M.B., Ch M., L.D.S.I. |
| Eng. | G. M. P. MURRAY, F.R.C.S.I. |
| D. CORBETT, Jr., A.B., F.R.C.S.I. | J. S. THOMSON, L.D.S. Ed. |

Assistant Dental Surgeons.

| | |
|------------------------------|-------------------------------|
| SHENSTONE BISHOP, L.D.S.I. | K. E. O'DUFFY, L.D.S., Ed. |
| VINCENT DOYLE, L.D.S.I. | GEORGE P. MOORE, M.B., Ch.M., |
| MURRAY THOMSON, L.D.S. Edin. | L.D.S. Eng. |

Anæsthetists.

| | |
|--|--------------------------------------|
| J. G. CRONYN, L.R.C.S.I., L.K.Q.C.P.I. | CHAS. J. BOYCE, L.R.C.S.I., L.R.C.P. |
| JAS. B. COLEMAN, M.D., Ch.M., R.U.I. | MICHAEL O'SULLIVAN, M.B., Ch.B., |
| J. DALLAS PRATT, M.D., F.R.C.S.I. | F.R.U.I. |
| HENRY DRURY, M.D., F.R.C.P.I. | |

Pathologist—JOHN MALLET PURSER, M.D.

Registrar—WILLIAM A. SHEA.

All Dental Students who have passed their Preliminary Examination are admissible to the Clinical Instruction of the Hospital, after paying Fees and subscribing to the conditions prescribed by the Staff.

In addition to Clinical Instruction, Courses of Lectures and Demonstrations will be given at the Hospital in Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Dental Microscopy, crowns, pivots, porcelain inlays, gold fillings, &c.

In addition to the longer courses of Hospital attendance, special courses of three months' duration, will be given to Surgeons about to join the Army and Navy, or to practise in the Colonies or remote country districts.

Regulations as to Fees and other conditions can be obtained from the Registrar of the Hospital, or from

R. THEODORE STACK, Dean.

COOKE'S SCHOOL.

This School is recognised by the London University, and other Examining Bodies, and offers somewhat special advantages to such as aim at combining the Dental and Medical Curricula with economy as to time and expense. Through the School being open for Anatomical work, not only during the winter months, but also during the summer months, extra time is obtained which would admit of the Dental and Medical Curricula being taken conjointly in something like the time usually allotted to either. It is not intended to take on *for Curriculum work*, at Cooke's School more than a limited number of men, *who must be steady and earnest workers*. For such, however, exceptional advantages are offered in regard to thoroughly practical work in Anatomy and Physiology. The School also affords ample opportunities for additional work in preparation for the various examinations: dissecting room well supplied with dissected parts, &c., &c. For further information apply to Mr. Thomas Cooke, F.R.C.S., 40, Brunswick Sq., W.C.

INSTITUTE OF DENTAL TECHNOLOGY, AND SCHOOL OF MECHANICAL DENTISTRY, 4, LANGHAM CHAMBERS, ALL SOUL'S PLACE, LONDON, W.

The Institute has been recognised by the Technical Education Board of the London County Council as a School where intermediate Scholarships can be held for a two years course in Manual Training, Science, and Applied Dental Technics.

The *first* year's course is mainly devoted to Manual Training in Wood and Metal Work at Anvil, Forge, Vice, and Lathe, with Drawing; Instrument Making; Modelling and Wood-carving with Repoussé Work; Pattern-making and Moulding; and the Scientific Course in Physics, Chemistry, and Morphology of the Teeth, and introductory Mechanical Laboratory course;

the *second*, to Applied Manual Training in a graduated series of dental appliances, Plate Work, Crown and Bridge Work; and the Applied Science Course of Chemical and Metallurgical Dental Technics, Furnaces, Metals, Alloys, Solders, Plate, Wire, Clasps, Amalgams, and Cements; the *third*, to special and more advanced work in Mechanical Dentistry, comparative value of different methods, Keramics, Continuous Gum Work, Obturators, Dental Splints, and Surgical Appliances and Restorations; and to Research Work or Elective Studies according to individual capacity.

The Manual Training Department is in full working order under the superintendence of W. H. MASSEY (City and Guilds Certificate).

The Scientific Department will be ready in October, under the direction of W. I. APRAIK, Ph.D., F.I.C., F.C.S.

The Art Teaching will be conducted by special instructors from the Guild and School of Handicraft, by arrangement with C. A. ASHBEE, M.A.

The Mechanical Laboratory is open daily, under the superintendence of Mr. W. Lombardi and E. C. Dimock, L.D.S. Eng.

The Sedley Taylor (£25) and the Jonas (£10) Scholarships will be awarded according to the applicant's skill and experience in handicraft, previous to entrance as a Student.

Probationary Course in Manual Training, three months, 38 hours teaching weekly; pupils can enter at any time. Fee, £21, which will be accepted as part premium; and the course as part time of any subsequent indenture.

A Special Practical Tuition Class will commence early in October, for the practical examination in Mechanical Dentistry for the L.D.S.

Evening Classes are arranged each term in Crown and Bridge Work, Special Methods in Mechanical Dentistry including an Improver's Course, and Manual Training.

Further particulars and full syllabus may be obtained from the Principal,—

GEORGE CUNNINGHAM, M.A. Cantab., D.M.D. Harvard Univ.,
L.D.S., R.C.S. Eng.

IV. GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. F. COLYER, M.R.C.S., L.R.C.P., L.D.S., who attends at the Hospital, two days a week, at 9 a.m. for Dental Operations. A course of Lectures on Dental Surgery is also given during January, February, and March, and Tutorial classes three days each week throughout the year by Mr. COLYER.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The composition fee for dental students is 54 guineas, or 60 guineas, payable in two instalments of 30 guineas each.

A proportionate reduction of the above fees will be made to those students who have completed part of the curriculum at a recognized institution.

The hours of lectures have been specially arranged to suit the convenience of dental students. Charing-cross Hospital is within three minutes' walk of the Dental Hospital of London.

For further information apply to the Dean, Dr. Montague Murray, or to the Librarian and Secretary, Mr. J. Francis Pink, at the office of the Medical School, Chandos Street, Charing-cross, between the hours of 10 and 4.

LONDON HOSPITAL AND MEDICAL COLLEGE.

Dental Surgeons—Mr. CUNNINGHAM & Mr. DOLAMORE.

DENTAL DEPARTMENT.

Mr. Cunningham and Mr. Dolamore give practical instruction during the Winter and Summer Sessions on Mondays, Tuesdays, Wednesdays and Thursdays at 9 a.m. In selecting from Candidates for the office of Dental Assistant, priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department. A class for special instruction in filling teeth will be formed each term. Candidates for Dressership must undertake to attend regularly on Mondays and Thursdays, or on Tuesdays and Fridays, for three months, and to follow the practical course of demonstrations.

DENTAL SURGERY.

By GEO. CUNNINGHAM, M.A. Cantab., L.D.S. Eng., D.M.D. Harv., and W. H. DOLAMORE, M.R.C.S., L.R.C.P., L.D.S. Eng., Surgeon-Dentists to the Hospital.

Thursday, at 11 a.m.

This Course of Lectures, specially arranged for Medical Students, will be delivered during May and June.

The Lectures will be supplemented by demonstrations of practical work and will be specially directed to meet the requirements of the Medical Practitioner. It will comprise a short description of the Anatomy and Physiology of the Teeth, special attention being given to Oral Hygiene.

Irregularities of the Teeth, with special reference to cases which may be treated by surgical means as distinguished from those requiring dental appliances.

Dental Caries and its treatment, which will be specially directed to palliative dressings and simple fillings.

Diseases of the Dental Pulp and Periosteum and their treatment.

Neuralgia and other affections arising from dental causes.

The practical work will include exercises in the extraction of teeth on models specially prepared or on the Cadaver, and the preparation of cavities and simple fillings on Models specially prepared. The demonstrations will illustrate, as far as possible, the whole range of dental operations, with a view to showing what assistance can be afforded by the dental practitioner.

DENTAL ASSISTANTS.

Two or more Dental Assistants are appointed every three months. The terms of office date from the first Tuesday in January, April, July, and October.

Application for further particulars with reference to these classes may be made to the Warden, at the College.

KING'S COLLEGE, STRAND, W.C.

Special arrangements are made for Dental Students. Apply to the Dean.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeon—J. S. TURNER, M.R.C.S., L.D.S.

Dental Surgeon—W. STORER BENNETT, F.R.C.S., L.R.C.P., L.D.S.

Assistant Dental Surgeon—W. HIERN, M.R.C.S., L.D.S.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures—which are arranged to fit in with the work at the Dental Hospitals—and Hospital Practice on payment of a fee of 54 guineas, in one payment, or by instalments of £42 on entrance, and £21 at the beginning of the Second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical Demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the Hospital free, others pay a fee of 2 guineas.

Further information may be obtained from W. Pasteur, M.D., the Dean, or from the Resident Medical Officer at the Hospital.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeons—MR. PATERSON, MR. ACKERY.

Assistant Dental Surgeons—MR. READ, MR. ACKLAND.

The Dental Department of the Hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

The fee for general subjects for Dental Students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—H. L. ALBERT, M.R.C.S.

Mr. Albert attends at the Hospital on Mondays and Fridays at 12 noon; his assistant on Tuesdays and Saturdays, at 12 noon.

Fees for general subjects in Dental Surgery, exclusive of Practical Chemistry, £50, or £55, in two instalments: first year, £30; second year, £25.

Further information can be obtained by application to Dr. ISAMBARD OWEN, Dean of the Medical School.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—MORTON SMALE, M.R.C.S., L.D.S.

Practical instruction in Dental Operations is given on Wednesdays and Saturdays at 9 a.m. Dressers are appointed who hold office for three months.

For prospectuses and further information apply to the School Secretary, Mr. FREDERIC H. MADDEN.

GEORGE P. FIELD, Dean of the School.

ARTHUR P. LUFF, M.D., Sub-Dean.

ST. THOMAS'S HOSPITAL.

Dental Surgeon—CHARLES EDWIN TRUMAN, M.A. Cantab, M.R.C.S.,
L.D.S.

Assistant Dental Surgeon—Vacant.

Gentlemen may receive instruction in diseases of the teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, and the application of artificial appliances, are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery, is, for the two years, £65, or by instalments, £55 for the first year, and £15 for the second year.

UNIVERSITY COLLEGE HOSPITAL.

Dental Surgeon—SIDNEY SPOKES, M.R.C.S., L.D.S.

Mr. Spokes attends at the Hospital on Tuesdays and Fridays, at 9.30 a.m. and delivers a Course of Lectures on Fridays at 5 p.m., during the months of November and December.

At University College a material reduction in the fees is made for students who are entered at a recognised Dental Hospital. For those who do not require Chemistry and Materia Medica, there is a Composition Fee of 50 guineas.

WESTMINSTER HOSPITAL.

Consulting Dental Surgeon—J. WALKER, M.D., M.R.C.S., L.D.S.

Dental Surgeons—C. W. GLASSINGTON, M.R.C.S., L.D.S., & E. GARDNER,
L.D.S.

Dental Department.

The Dental Surgeons, Mr. Glassington and Mr. Gardner, attend at 9.15 a.m. on Wednesdays and Saturdays respectively.

Mr. Glassington attends at 9.15 a.m. on Wednesdays, and Saturdays for practical demonstration of diseases and operations of the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s., for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for £50 in one sum on entrance, or for two sums of £27 10, payable at the beginning of each year.

Mr. Glassington will give a series of Demonstrations on Dental Surgery and Pathology, to meet the requirements of the general student of Medicine, at an hour to be determined at the commencement of the Session.

A Scholarship value £20 is offered annually in September for Competition to commencing Dental Students.

Introductory Address.—Dr. Wills.

Annual Dinner, Westminster Palace Hotel, 7 p.m., Mr. Thos. Bond, F.R.C.S., in the chair.

Dinner Secretary.—Mr. Tubby, F.R.C.S.

HARVARD UNIVERSITY DENTAL DEPARTMENT, BOSTON, MASS., U.S.A.

The Sessions of this School begin the last Thursday in September, and end the last Wednesday in June, making nine months of practically continuous work in each year.

General Anatomy, with Dissections, Physiology, General Chemistry, Hygiene, Histology, and Embryology, and Bacteriology, are the studies of the first year. Of the second year they are Operative and Mechanical Dentistry, and Orthodontia, Crown and Bridge work, and Metallurgy, Materia Medica and Therapeutics, Oral Anatomy and Physiology, and Bacteriology, Dental Pathology and Oral Surgery. Of the third year Operative and Mechanical Dentistry, and Orthodontia, Crown and Bridge work and Metallurgy, Neurology, and Surgical Pathology and Surgery. The Student can also attend gratuitously all the *lectures* in any other department of the University.

The Infirmary furnishes abundant facilities, averaging 8,000 operations, of which a large proportion consists of filling teeth, every year.

The University degree D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

For the first year a student is a member of the school the fee is 200 dols.; for the second year, 150 dols., for the third year 150 dols., and for any subsequent year, 50 dols.

For further information and catalogues address, Eugene H. Smith, Dean, 283, Dartmouth Street, Boston, Mass.

V. SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, 40, LEICESTER SQUARE, W.C.

OFFICERS FOR 1896-97.

President—R. H. WOODHOUSE.

Vice-Presidents :

RESIDENT.

JOHN FAIRBANK.
C. J. B. WALLIS.
JOHN ACKERY.

NON-RESIDENT.

GEORGE HENRY, (Hastings).
J. F. COLE, (Ipswich).
MALCOLM MACGREGOR,
(Edinburgh).

Treasurer—W. H. WOODRUFF.

Librarian—W. A. MAGGS.

Curator—STORER BENNETT.

Editor of the Transactions—J. F. COLYER.

Honorary Secretaries.

J. H. MUMMERY, (Foreign).

A. E. CLAYTON WOODHOUSE, (Council),

H. BALDWIN, (Society).

Councillors.

RESIDENT.

I. A. GARTLEY.
C. ROBBINS.
S. SPOKES.
A. SMITH.
G. D. CURNOCK.
H. J. GOULD.
J. O BUTCHER.
H. L. ALBERT.
H. J. KLUHT.

NON-RESIDENT.

T. ARKÖVY, (Budapest).
A. W. W. BAKER, (Dublin).
F. E. HUXLEY, (Birmingham).
G. CUNNINGHAM, (Cambridge).
C. B. MASON, (Scarborough).
J. J. ANDREW, (Belfast).
E. N. WASHBOURNE, (Ripon).
I. S. AMOORE, (Edinburgh).
W. R. ACKLAND, (Bristol).

EXTRACT FROM THE BYE-LAWS.

Objects and Constitution of the Society.

The Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery, and for the promotion of intercourse among Members of the Dental Profession.

The Society shall consist of Resident, Non-Resident, Corresponding, and Honorary Members.*

1. The Resident Members shall consist of gentlemen residing or practising wholly or partly in London or within ten miles of the General Post Office, St. Martin's-le-Grand.
2. The Non-Resident Members shall consist of gentlemen wholly practising beyond ten miles from the General Post Office.
3. The Corresponding Members shall consist of distinguished gentlemen residing in the Colonies of Great Britain or in Foreign Countries.

* Candidates for the Resident, Non-Resident, or Corresponding Membership of the Society shall not be eligible unless they practise as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery, or qualified Practitioners of Medicine or Surgery: or possess such a Diploma or Degree as in the opinion of the Council, will qualify them for the Membership of the Society.

4. The Honorary Members shall consist of distinguished Practitioners of Dental Surgery who have retired from practice, of distinguished Medical Practitioners, and of gentlemen distinguished in any department of Science.

Persons who advertise in the public journals, or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which in the opinion of the Council of this Society, is derogatory to the respectability of the Profession, shall not be considered eligible for nomination as members.

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental Practice, shall be a member of this Society.

Election and Admission of Resident and Non-Resident Members.

Candidates for Resident Membership shall be recommended by four or more Members, two at least signing from personal knowledge. Candidates for Non-Resident Membership shall be recommended by three members, one at least signing from personal knowledge.

All recommendations for resident or non-resident members shall be submitted to, and approved of, by the Council, before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a Resident Member shall pay Three Guineas as an Admission Fee and an Annual Subscription of Two Guineas, *in advance*.

Every person elected a Non-Resident Member shall pay Two Guineas as an Admission Fee and an Annual Subscription of One Guinea *in advance*.

The Entrance Fees and First Annual Subscriptions shall be paid on admission, and the subsequent Annual Subscriptions in the month of November in each year; but new members proposed at or after the January Meeting, shall not be required to pay any Subscription for the current Session.

Ordinary Meetings.

The Ordinary Meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m. precisely, except in the month of January, or when an Act of Parliament holiday occurs on that day, the meeting shall be held on the Monday next ensuing.

Each Member may introduce two Visitors at these Meetings on writing the Visitors' names in a book to be kept for that purpose. The same Visitors will not be admitted more than three times during one Session.

Annual General Meeting.

The Annual General Meeting of the Society for the election of the Officers and Councillors, &c., shall be held on the evening of the first Monday in June every year.

Society's Transactions.

The Transactions of the Society, under the designation of "Transactions of the Odontological Society of Great Britain," shall be printed at such times and in such manner as the Council shall direct.

The "Transactions" shall be presented to all Resident and Non-Resident members of the Society who have paid their Annual Subscriptions.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND,

31, CHAMBERS STREET, EDINBURGH.

President—Mr. J. STEWART DURWARD, L.D.S.*Vice-Presidents.*

Mr. J. S. AMOORE, L.D.S.

Mr. REES PRICE, L.D.S.

Treasurer—Mr. MALCOLM MACGREGOR, L.D.S.*Council*.—Messrs. CAMPBELL, WATSON, WALKER, DALL.*Secretary*—Mr. HERBERT B. EZARD, L.D.S., 18, Manor Place, Edinburgh.*Ordinary Meetings*.—The Society meets on the second Thursdays of November, December, January, February and March.

EXTRACTS FROM THE CONSTITUTION AND LAWS.

Name and Objects.

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of Medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members.

(A.) Ordinary Members. Gentlemen shall be eligible for Ordinary Membership who hold the Licentiate in Dental Surgery of any of the Licensing Bodies of Great Britain or Ireland, or a Colonial or Foreign qualification recognised by the General Medical Council, entitling them to practise dentistry in Great Britain.

(B.) Honorary Members. Gentlemen (practising or retired) who hold a qualification recognised by the General Medical Council, or Foreign or Colonial Dentists holding a qualification recognised in their own country, who may have distinguished themselves in the practice of, or in connection with Dentistry, and Medical or Scientific men who may have distinguished themselves in connection with Dentistry, shall be eligible as Honorary Members.

(C.) Corresponding Members. Gentlemen resident in the Colonies or Foreign Countries, holding qualifications recognised in their respective countries shall be eligible as Corresponding Members.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes by ballot if required.

Obligations of Members.

No member shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue members of the Society. But members who practise in towns other than that in which they reside, shall be allowed to intimate their visits; such intimations being subject to the approval of the Council.

Applications for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another.

After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over to the next, when the Candidate shall be balloted for, when two-thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members shall pay an Entrance Fee of Half a Guinea, and Half a Guinea of an Annual Subscription in advance. All Annual Subscriptions to date from the 1st March preceding the Candidate's admission.

NORTH OF ENGLAND ODONTOLOGICAL SOCIETY, NEWCASTLE-ON-TYNE.

President—W. SOMMERVILLE-WOODIWI, L.D.S. Edin.

Vice-Presidents:

J. A. FOTHERGILL, M.R.C.S., &c. | R. L. MARKHAM, L.D.S.I.

Hon. Treasurer—W. G. ROUTLEDGE, L.D.S. Edin.

Hon. Secretaries:

J. T. JAMESON, L.D.S. Edin., 4, Ridley Place.

W. D. MOON, L.D.S. Eng., 8, Jesmond Road.

Council:

JOHN KEKWICK, L.D.S. Eng.
J. W. DANIELS, L.D.S. Edin.
S. BROWN.

J. G. RANKER, L.D.S. Eng.
W. J. MASON, L.D.S. Edin.
J. F. KEKWICK, L.D.S.

Extract from Laws.

The Society shall have for its objects the diffusion of knowledge, and the promotion of intercourse among Dentists, and the advancement of the general interests of the Dental Profession.

The Society shall consist of Ordinary and Honorary members:—

The Ordinary Members shall consist of gentlemen who are practising or have practised as dentists, and are registered under the Dentists' Act of 1878.

Obligation of Members.

Members shall not be permitted to advertise in the public journals, or by circulars, either their professional attainments, or public appointments, or anything relating to their modes of practice or charges: or to expose for public inspection specimens of operative or mechanical dentistry, or conduct their practices in any way which in the opinion of the Council is derogatory to the Profession.

Application for Membership.

Candidates for admission as Members shall be recommended by one Member from personal knowledge, and by one Member from general knowledge.

Meetings.

The Ordinary Meetings will be held in Newcastle-on-Tyne, on the second Thursday of each of the months, from October to March inclusive, at 6 p.m.

Contributions.

Members shall pay an Entrance Fee of five shillings on admission, and an annual subscription of half a guinea in advance.

THE BRITISH DENTAL ASSOCIATION,

(Incorporated June 3rd, 1880.)

40, LEICESTER SQUARE, LONDON.

President—FREDK. CANTON, M.R.C.S., L.R.C.P., L.D.S., L.S.A.*Vice-Presidents.*

SIR EDWIN SAUNDERS, F.R.C.S. | Dr. JOHN SMITH, F.R.C.S., Edin.

J. SMITH TURNER, M.R.C.S., L.D.S. Eng.

President of Representative Board—J. H. MUMMERY, M.R.C.S., L.D.S.*Treasurer*—E. G. BETTS, M.R.C.S., L.D.S., Eng.*Honorary Secretary*—W. B. PATERSON, F.R.C.S., L.D.S. Eng.*Extracts from Memorandum of Association and Bye-laws.*

The objects for which the Association is established are the promotion of Dental and the allied Sciences, and the maintenance of the honour and the interests of the Dental Profession by

“The Periodical meetings of the Members of the Association and the Dental profession generally, in different parts of the country.

“The publication of a periodical journal, and by

“The maintenance of the spirit and provisions of the Dentists' Act, by such lawful means as may be necessary, &c., &c.”

Extracts from the Bye-laws.

A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided that he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a showcase exposed to public inspection; or by means of public advertisements or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any registered practitioner not disqualified by any Bye-law who shall be recommended as eligible by any three Members of the Association (the recommendation of one being from personal knowledge), and who has signed the appended form of application for admission and agreement as to terms of Membership, may be elected a Member by the Representative Board or by the Council of a recognized Branch.

The subscription is one guinea per annum, and each member is entitled to a copy of the Journal of the Association monthly, and to attend the Annual Meetings of the Association.

THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

EXTRACT FROM BYE-LAWS.

1. Composed of Members of the British Dental Association who reside in the Midland and North Western Counties of England, and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting usually takes place in June; and informal meetings are held in February and October.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental Specimens, appliances or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public advertisements or circulars

describing modes of practice; or patented or secret processes; or by the publication of his professional charges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote or hold office therein.

3. Any member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-law 2, and who shall be recommended as eligible by any three members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

5. The Annual Subscription to the Branch is as follows:—Members, Five Shillings; Associates, Ten Shillings. The subscription to date from the time of election, and from the 1st of January in each subsequent year, and to be paid in advance, but Members or Associates elected in the months of October, November, or December, shall only pay one subscription for the remainder of that year and the following one.

The Autumnal Meeting will be held at Buxton in the month of October, and the next Annual Meeting will be held at Rochdale in the month of June.

Honorary Secretary, I. RENSCHAW, 87, Drake Street, Rochdale.

METROPOLITAN BRANCH OF THE BRITISH DENTAL ASSOCIATION.

Composed principally of members of the British Dental Association practising within the London postal district. The Branch meets three or four times a year. One meeting in the Summer is devoted to Demonstrations, and the Annual Meeting is held in January.

The qualifications of Membership are similar to those in the other Branches.

Honorary Secretary, SIDNEY SPOKES, 59, Queen Anne Street, Cavendish Square, W.

BRITISH DENTAL ASSOCIATION, WESTERN BRANCH.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of the Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any dental practitioner, being a member of the British Dental Association, who can subscribe to the conditions laid down in Bye-law 4, and has been recommended as eligible by any three members of the Branch may be elected a member of the Branch by the Council.

NOTE.—If the applicant be not previously a member of the British Dental Association, the Council has power to elect to the Association.

Hon. Sec., THOMAS ARTHUR GOARD, 6, West Southernhay, Exeter.

BRITISH DENTAL ASSOCIATION. EASTERN COUNTIES BRANCH.

Districts.

Norfolk, Suffolk, Cambridgeshire, Essex, Lincolnshire, Northamptonshire, Bedfordshire, Hertfordshire, and Bucks.

Bye Law.

Any Registered Dental Practitioner, who shall be recommended as eligible by any three members of the Branch, (one being from personal knowledge,) may be elected a member by the Council. The election to be by ballot; three black balls to exclude.

Honorary Secretary, A. HOPEWELL SMITH, Lindum House, Boston, Lincs.

BRITISH DENTAL ASSOCIATION, SOUTHERN COUNTIES BRANCH.

The Branch shall consist of Members, Honorary Members, and Associates. *No one shall be eligible for Membership who is not already a Member of the British Dental Association.* Any registered practitioner of good character, who does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window; or in a showcase exposed to public inspection; or by means of public advertisements, circulars, or notices, describing his qualifications, appointments, scale of charges, modes of practice, or patented or secret processes, may be elected a Member or an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote, or hold office therein.

BRITISH DENTAL ASSOCIATION, SCOTTISH BRANCH.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of this Branch, provided he be of good character: that he does not conduct his practice by means of the exhibition of dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public inspection: or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any dental practitioner who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any of those members of this Branch, may be elected a member by the Council, and shall be admitted a member of the British Dental Association.

Hon. Sec. REES PRICE, 163, Bath Street, Glasgow.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE, W.C.

The object of the Society is the consideration of matters generally and specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator, and nine Councillors, these Councillors consisting of five senior and four junior students. The President is chosen from the past Students who have obtained their degree of L.D.S.; the Vice-Presidents from past Students with or without qualification.

The entrance fee for ordinary members is half-a-crown, and there is an annual Subscription of the same amount.

Ordinary meetings are held at 8 p.m. on the second Monday in every month, from October to March inclusive during the winter Session, also a meeting on the second Monday in May during the Summer Session. The annual meetings for the election of officers and other business is held on the third Monday of January in each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or School, to the meetings, with the consent of the President. Visitors are invited to take part in the discussion of the papers and clinical cases.

There is a Library and a Museum in connection with the Society, both being under the superintendence of the Curator.

The Council offer a prize, value £3 3s., at the end of each year, for the best paper read before the Society during that year.

STUDENTS' SOCIETY OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE, GREAT PORTLAND STREET, W.

This Society, which was established March 16, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its Members: and all Students of Dental Science are eligible for Membership. All candidates for Membership must be approved by the Council before being proposed to the Society for election. The Entrance Fee is 2s. 6d., and the Annual Subscription, 2s. 6d., to be paid in advance. The Ordinary Meetings of the Society are held on the first Friday in each month, from October to June, both inclusive, except October, May, and January, when they are held on the second Friday. The meetings commence at 8 p.m. precisely. Each member may introduce two visitors, not being Students of the Hospital or College, but the same visitors may not be admitted more than three times during one Session.

THE STUDENTS' SOCIETY OF THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

The object of the Society is the consideration of matters generally and specially appertaining to Dental Science, and for the promotion of intercourse amongst its members.

The affairs of the society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator and Librarian, Editor of Transactions, and not more than four Students of the Hospital.

The General Meeting is held on the last Tuesday in every month from October to March inclusive and the Annual Meeting is held in May of each year.

Every member has the power of introducing two Visitors not being Students of the Hospital to a General meeting with the consent of the President.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LIVERPOOL.

This Society is constituted for the consideration of matters generally and specially appertaining to Dental Surgery.

Candidates for membership must be approved by the Council before being proposed to the Society for election. Such proposals are posted during one meeting of the Society, and remain so posted until the next monthly meeting when the candidate is balloted for. No candidate is elected unless he have the votes of two-thirds of the members present. Nine to form a quorum.

Every member has the power of introducing two visitors, not being Students of the Hospital or School, to the evening meeting, with the consent of the President.

An ordinary meeting is held on the third Monday in every month, from October to March inclusive; the chair is taken at eight o'clock p.m. The annual meeting for the election of officers and other business will be held in March, on the third Friday to receive the Treasurer's and Secretary's report.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

The object of the Society is for the reading and discussion of Papers for the furtherance of Dental Science amongst its Members.

Candidates for Membership must be proposed, seconded, and elected at one of the Monthly Meetings.

Every Member shall with the consent of the President have the power of introducing a visitor to the meeting, who may take part in discussions, but is not entitled to vote on any business.

An ordinary meeting is held on the last Thursday in every month, from October to March inclusive, at the Dental Hospital, Newhall Street, commencing at 6 p.m.

The Annual Meeting for the election of officers and other business, will be on the last Thursday in October next.

The President is PERCY T. NADEN, L.D.S.

All communications for the above Society should be addressed to G. F. CALE-MATTHEWS, Hon. Sec., Dental Hospital, Birmingham.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

This Society, instituted in July 1885, was established for the consideration of matters generally, and specially pertaining to Dental Science, the advancement and welfare of its members, and the facilitating of social intercourse among them. These objects being promoted by means of Papers, Debates, Clinics, Casual Communications, Social Gatherings, and by the various sections of the Athletic Club of the Society.

Ordinary meetings are held in the Board Room of the Dental Hospital, on the first Monday of each Month, from November to March inclusive, and the Annual Dinner is held as near the date of the Annual General Meeting as convenient.

Membership is open to all, who are, or have been, Students of the Edinburgh Dental School.

The President for Session 1896-97 is Robert Lindsay, L.D.S., and the Hon. Sec., Charles E. Page, L.R.C.S.

DENTAL ASSISTANTS' ASSOCIATION OF GREAT BRITAIN.

The above Association has been established for the advancement and protection of Dental Assistants, and the temporary relief of Members when out of employment.

For further particulars apply to the Secretary, 30, Cursitor Street, Chancery Lane, London, W.C.

British Journal of Dental Science.

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HINTS ON PORCELAIN TOOTH AND GUM COMPOUNDS.*

By MR. ROBERT MARSTON, Leicester.

MR. GEORGE BRUNTON'S communication "On Some Experiments in Colouring Porcelain for Teeth and Gum-bodies," read before the Odontological Society, may be construed into an effort to raise Prosthetic Dentistry above its present level. Apparently, with this object in view, he presents to the profession practical knowledge which doubtless has been gleaned from an expensive series of experiments, and having set this praiseworthy example, he requests others to help on the good work by recounting their experiences arising from the practice of the "Continuous Gum Process." That object deserves the consideration and help of all whom experience has placed in a position to be able to contribute any mite of practical information for the common good.

If his appeal meets with the response that it merits, perhaps, as the information emanates from different points of the compass, and from individuals of different temperament, who most likely, direct their attention more especially to some particular phase of the subject, the whole of the observations thus furnished might comprehend all the various aspects of Dental Ceramic art; viz., (1) Ceramic chemistry, which presents elements and compounds to each other in their

* A response to Mr. George Brunton's Essay delivered before the Odontological Society of Great Britain.

proper ratios for different purposes, and converges chemical energies into the act of producing any predetermined effect at varying ranges of temperature. (2) Ceramic physiology, which embraces the whole architecture of those causative principles which create pre-determined physical effects irrespective of different formulas and the formation of their dissimilar chemical products. (3) Ceramic manipulation, which conducts chemical and physiological principles to a predetermined issue. (4) Prosthesis which determines dimensions and physical effects according to the varying anatomical and physiognomical requirements peculiar to individual cases.

Mr. Brunton pioneers a departure, inasmuch as he advocates the formulation of porcelain compounds by manipulators themselves, instead of having to peg their chances of success on the uncertainties of mysterious formulas, whose pronenesses may be the least appreciated when best understood. He asserts that the analysis of his formula, given in his reading, characterizes his compound as more of a glass than a porcelain, and he thinks it might more correctly be called an enamel. I wish to remind those who are interested in this subject that the word "Glass" is an ambiguous term. To outsiders it conveys an idea of general physical properties without the slightest reference to chemical formula; the same may be said of the terms "Enamel" and "Porcelain." Every glass formula, without any addition whatever, is capable of being changed into some kind of true porcelain; and every kind of porcelain, may, without any addition to its formula, be converted into some sort of true glass. Ceramic chemistry only recognizes these terms as progressive distinctions, which characterize the transition of *all* silicates from the pulverulent to the vitreous condition. This is a very simple fact, yet a person may have to go through a great deal of unlearning before being willing to accept it. We

may even go so far as to say that the word "Glass" does not necessarily imply a silicate at all, for besides siliceous glasses, there are Phosphatic glasses, viz., a fused phosphate, or a fused compound of two or more phosphates; and also Sulphatic glasses, viz., a fused insoluble sulphate, or a fused compound of two or more sulphates. There are, besides the foregoing varieties of glass, also glasses composed of fused oxides, which do not contain either a silicate, a phosphate, or a sulphate; and porcelaneous compounds for special purposes are derivable from all these sources.

Dental requirements, however, necessitate the use of siliceous compounds, formulated to resist acids, alkalies, water, the fluids of the mouth and other agencies to which dental appliances may be exposed in the run of ordinary circumstances. Mr. Brunton's allusion to the accidental opacity sometimes developed in silicates containing large proportions of the oxides of magnesium, calcium, and aluminium, does not properly apply to scientific formulas; it proceeds from either erratic proportions, or unskilful firing, and the analysis given in his paper unmistakably points to an embodiment of that pre-disposition. The appearance of sulphuric acid, too, even in the small proportion mentioned, suggests that by firing the silicate a little more, the silicic acid would have been enabled to seize on the base of the sulphate and set the sulphuric acid free. That formula, as represented by analysis, does not require, and certainly could not be improved by, any proportion of a sulphate, either as a pigment, or in any other form. This brings us to Mr. Brunton's allusion to the pigmenting of porcelain; his method is to mix an aqueous solution of known strength with a given weight of the porcelain powder, but it is impossible by this means to colour the mass throughout, because all soluble salts are brought to the surface of the mass by capillary attraction during evaporation of the water, and Mr. Rein-

hardt's very practical question referring to this point, conveyed a valuable suggestion to the meeting, for by treating the solution with tin, he produces the insoluble Purple-of-Cassius and effectually prevents abstraction of the colour, thereby ensuring a uniform and perfect result. Ceramic pigments comprise peroxides, proto-oxides, atomized metals, phosphates, sulphates, sulphides, antimoniates, sulph-antimoniates, stannates, molybdates, tungstates, chromates, manganates, aurates, uranates, plumbates, oxychlorides, &c. These should be divided into two classes, viz., (1) Those that require an *Oxidising* atmosphere during muffle treatment; (2) and those that require a *Reducing* atmosphere for the perfect development of their pigmental hue. Many of these are suitable for low temperature only, and others although capable of resisting a greater amount of heat, have a strong affinity for sulphur, and are otherwise injuriously acted upon by the conditions and environments of Dentistry; therefore a very small percentage only of ceramic pigments is admissible in dental formulas, and these should be fixed at a very high temperature to ensure their permanency whenever they become inadvertently overheated in the processes of the dental laboratory.

All Tooth and Gum compounds, without one single exception, require an *Oxidising* atmosphere in the muffle during the operation of firing, but, strange to say, the fashion in vogue amongst Continuous Gum workers, is to fire their pieces in a reducing atmosphere, and then too frequently they ungraciously receive from the muffle mouth the natural result of their own deliberate action.

All *blast* furnaces create a *Reducing* atmosphere, whilst all draught furnaces—if properly constructed for dental work,—create an *Oxidising* atmosphere. Various means have been devised, and are being used, for preventing the injurious action of the products of combustion upon the

enclosed denture, in blast furnaces, the best of all being a pure platinum muffle, such an one as the paper states Mr. Brunton uses, but the expensive fitting has other disadvantages besides its enormous cost, and if not distinctly inferior is certainly not superior to a "fireclay compo" muffle, where an Oxidising atmosphere is created by draught.

Another fact which should be remembered by those who wish to take up the Continuous Gum process is that the words "Analyses" and "Formulas" are by no means to be considered as equivalent terms, for the ultimate analysis of a dental porcelain is what the original formula *never was*, and an original formula of a dental porcelain is what its ultimate analysis *can never become*. Not one of those analyses there given represents its original formula, and the original formula of each if treated in several different ways would yield as many different analytical results. Temperatures, and periods, or what is usually called "the go of the furnace" play no insignificant part in these changes, therefore the quantitative analysis of a *manufactured* porcelain is not one bit better for any practical purpose than a qualitative analysis of an original formula; it leaves experts to conjecture what sources the elements were derived from, and in what proportions they were originally combined.

DENTAL MATERIA MEDICA.—It was thought that the new Curriculum of the College of Surgeons would include some reference to this subject, but although it does not appear as one of the separate subjects, candidates will still do well to prepare themselves for questions which may come up either in the paper on Dental Surgery or at the *viva voce*. We hear that a new volume on "Dental Materia Medica and Therapeutics" is in the press, and will shortly be published by Messrs. Churchill. The author is Mr. C. W. Glassington, who has lectured on this subject for the last eight years at the National Dental College.

THE TREATMENT OF TEMPORARY TEETH*

By Mr. BATES, L.D.S. Eng.

In most of the standard works on Dental Surgery, I find that the treatment of temporary teeth is dismissed in a very few words, and we are told to treat them much as permanent teeth. Still it is a subject to deserve our fullest attention, and I have endeavoured to put together a few hints, and to describe a few simple methods of treatment which have proved useful to me in practice.

Pedley in his new work says in connection with abscessed teeth, "There is only one form of treatment necessary in such cases, and that is immediate extraction." And again in another place "If the tooth is at all loose and painful to bite upon, it should be extracted at once."

Now it seems to me that it is almost impossible to over-estimate the importance of retaining the temporary teeth until such time as Nature is prepared to replace them. Firstly, because it is absolutely essential to the child's welfare that it should be able to masticate properly (the habit of bolting the food, once formed, is most difficult to overcome), and secondly, because the too early loss of the temporary teeth is certain to result in crowding out of the permanent set, with its many attendant evils.

The necessity of retaining the temporary canines as long as possible, is too obvious to need comment, and the extraction of the second temporary molar, before the eruption of the six-year-old often results in irreparable mischief. The six-year-old takes the place of the temporary tooth, and so the bicuspid and canines are crowded out of line, or the bicuspid is wedged up in the jaw and mal-occlusion is the result, or lastly, the entire dental arch may be driven forwards. I

* Read before the Students' Society, Liverpool Dental Hospital.

firmly believe that a large proportion of the many cases of over-shot bite, in which we can obtain no history of thumb sucking, and which are so difficult to account for, are simply due to the reckless extraction of the temporary molars. In treating temporary teeth, we may confine our attention to the molar region, as the incisors and canines practically never cause trouble however carious. The molars, however, frequently do so at a very early age. I have had to fill them at two and a half years.

Now the management of young children requires a good deal of tact. We cannot expect them to bear pain with the stoic indifference we demand from our adult patients, and we must sacrifice our work rather than run the risk of making it impossible to do anything for them at all. The child should be taught to look upon a visit to his dentist as a pleasure, and I can assure you it can be done.

The various mechanical devices of the chair will be found most useful as a means of making friends. Also it is wise to make a point of showing the instruments and explaining their use, particularly in the case of the syringe. A child, who would have howled for his mother on finding his mouth unexpectedly full of warm water, will consider it a joke after being allowed to empty the syringe a few times into the spittoon. The engine is also very alarming at first, and I find it an excellent plan to commence by using a smooth burnisher instead of a bur until the child becomes accustomed to it.

Possibly it is occurring to some of you that the whole day would thus be spent in soothing the terrors of nervous infants, but time thus spent brings in the richest dividends of any investment I know, for having once gained a child's confidence it takes a great deal to make him withdraw it.

In passing to treatment I propose first to consider large superficial cavities or surfaces. These as a rule will be found

too sensitive to admit of sufficient excavation to hold a filling, and painting with lunar caustic will be found beneficial. Not only does this relieve the tenderness, but it seems to largely arrest the progress of decay, and the stain caused by the nitrate of silver is of no consequence in temporary teeth.

For crown cavities I find the phosphate cements last well, provided of course that the tooth can be kept dry during the insertion of the filling. In wet mouths, or where the napkin or ejector will not be tolerated, I use Sullivan.

In excavating the cavity, it must be remembered that the pulps in temporary are comparatively much larger than in permanent teeth, and care must be exercised to avoid making an exposure. This is particularly the case in distal surfaces of first molars. It does no harm to leave a considerable amount of leathery dentine at the bottom of a cavity, provided that the pulp is alive and healthy, and the character of the symptoms must be the guide in determining this.

In small proximal cavities affecting both molars, it is a common thing to find dentists, even of repute, treating the two as one, the excuse being that the teeth are too closely wedged to allow the passage of even the thinnest spatula between them. I cannot help regarding this as the worst of practice, as the difficulty is easily overcome by filling one cavity with gutta percha and the other with Sullivan.

In cases of exposed nerves I never use arsenic as I find that a pledget of wool dipped in carbolic acid, and sealed into the cavity with gutta-percha, will destroy the pulp quite as effectually if left in for a month. It has the advantage of almost instantly relieving pain, and there is less risk of destroying the absorbent organ. Upon re-opening the cavity, after this carbolic treatment, the pulp will be found bright red, and bleeding at the slightest touch, but scarcely at all sensitive, and it can be easily cut away with a sharp rose head bur. I never attempt to remove the pulp from the

finer canals, but fill the main pulp chamber with either iodoform and wax, or with wool saturated in iodoform and vaseline. I am certain that I do not have more than 1 or 2 per cent. of failures by this method. It is, however, wise after destroying a pulp to fill with a temporary stopping which can be easily removed in case of anything going wrong.

In cases of abscessed teeth, I totally disagree with Mr. Pedley that the "only treatment is by immediate extraction." Of all the cases of abscessed teeth, children's yield most readily to treatment, the reason being that nature will do so much for us in the case of young growing tissue. A child will come in, having been awake all night, and probably for many nights. On examination the tooth is found raised in its socket, so loose that it might almost be removed by the thumb and finger, and with an enormous amount of facial swelling. Instead of removing the tooth, take a sharp bur, or better still a spear-pointed drill, and open up the pulp chamber. The tooth must be held firmly with the left hand, otherwise the drilling will be unbearable. The opening of the pulp cavity is generally followed by a profuse discharge of pus and blood. Syringe this out and apply a very loose iodoform dressing. The pain will be almost immediately relieved; by the next day the swelling will have disappeared, and in a fortnight the tooth may be filled and will remain serviceable for years.

It has often been asserted that the destruction of the pulp necessarily results in the destruction of the absorbent organ, and consequent non-absorption of the roots. This, I am convinced is a mistake, for I have filled the pulp chambers of scores, I might almost say hundreds, of temporary molars at 3 or 4 years, and have found the roots practically gone when they were removed at 9 or 10 years. But even if they were not absorbed the evil caused by their retention would be nothing compared to that caused by the loss of the tooth.

Where a pulp has died under a Sullivan's stopping, rizo-dontrophy is a perfectly justifiable and most useful operation. Teeth thus treated last well.

And finally, in those cases the mere despair of surgery, where the tooth is too far gone to admit of any of the above treatments, it can often be rendered comfortable and retained as long as required by either cutting it away freely with a corundum disc, or even by cutting it down level with the gum margin with excising forceps, and let extraction be the very last resource.

DESCRIPTION OF A DEMONSTRATION OF THE USE OF DR. HERBST'S NEEDLE FOR FILLING CERVICAL CAVITIES.

By W. R. HUMBY, L.D.S.Eng.

The rubber dam is adjusted in the usual manner, in the present case exposing eight of the anterior teeth; the dam secured by clamps on the first bicuspid on either side.

The rubber is carried up between the teeth by a thread, the tooth to be stopped is thus in view, and it only requires the Herbst's needle to be applied, so that the gum and dam may be held out of the way that our work on the cervical portion of tooth may be proceeded with.

The needle in use is one made from a broken bur, the latter being ground to a fine point, on the side of a carborundum wheel, by gentle pressure and rotation. The latch end is broken off, and any roughnesses at fracture smoothed away.

The point is inserted beneath the free edge of the dam and passed upward until the needle point has passed by the seat of caries, and the sound cement is felt to have been reached.

Until now, the direction of the point has been upwards

and backwards ; when the true position is believed to be attained, the direction is changed so that the needle stands out at right angles to the cement—the position to be retained throughout the operation.

Securing the needle is very simple. One of the fingers of the left hand is placed on the projected rounded end of the needle, while the forefinger and thumb of the right grasp the middle, so as to release the left hand from its hold on needle. The left hand thus being free, it is used to stretch the dam forward and draw it over the end of needle ; the rubber, by its contraction towards the teeth pulls the needle into firm contact with the cement. According to Dr. Herbst this is the only hold the needle requires, but in consequence of a tendency to displacement, it is better to have a clip, such as are used for fastening neckties, passed under the rubber from the upper surface and made to grip the needle through the rubber.

The clip is thus presented edgewise to the patient's face ; to prevent local pressure a piece of domed metal is attached to edge of the clip by soft soldering. This addition resting against the lip secures the needle in position, and leaves both hands free during the greater part of the operation. If the mallet or disc is used, it is better to give the needle a little support by gently pressing it, but this precaution is only occasionally required.

The advantages are : the entire absence of pain ; the very rapid adjustment of dam and needle, averaging two minutes ; the entire freedom from any obstruction to cavity ; no laceration of gum, and no blood is drawn, the only evidence of any operation being a small red mark where the side of the needle rested against the gum margin ; and there is no need for any ligature.

British Journal of Dental Science.

LONDON, OCT. 1, 1896.

THE GENERAL MEDICAL COUNCIL ELECTION.

We have generally felt it our duty to credit the General Medical Council with a desire to do its best for the Dentists under its control, and have urged that due allowance must be made for the complexity of its constitution and its functions. There are always amongst our ranks practitioners who having paid the registration fee, seem to think that they must receive something in return in the shape of protection from the quack and the advertiser, and who likewise find fault with the Dentists' Act, which must indeed be studied in connection with any criticism of the Council. We have alluded to the Constitution of this Body, for it is too frequently forgotten that whilst some of its members are nominated by the Crown, and others are sent by the various Licensing Corporations, a small minority only is composed of *elected* representatives of the Medical Profession. It speaks well, however, for the Dental Profession that the large majority of its members have exhibited patience and confidence for nearly twenty years, and that, recognising the advantages coincident with the association by Law with the other members of the Healing Art, they are content to await the gradual strengthening of professional interests. Whilst, however, repudiating impracticable critics, we confess that we are of opinion that the time has arrived for the Council to have the beneficial assistance of a Dentist to represent his fellows at its meetings. The present moment is perhaps an appropriate one at which to refer to this matter. The periodical election of direct representatives on the Council will shortly take place, and it may be well to remind those Dentists who are also on the

Medical Register that, amongst the numerous candidates, Drs. Glover, Drage, and Woodcock have all expressed their willingness to support Dental Representation on the General Medical Council. We feel sure our Medical brethren could not do better than give their votes to secure the return of these three gentlemen in November, whilst those other Dentists who have as yet, no direct opportunity of recording their views may do good work by placing the matter before their medical acquaintances and soliciting support. If this were done systematically throughout the country, the dental interest would soon become a very important factor at these elections, for there are few dentists who are not upon intimate terms with at least one medical voter, and Candidates cannot even now afford to neglect the "Dental interest."

It has been said that the best representatives are not the direct representatives ; they speak to the gallery, whilst the Crown nominees are able to maintain an independence. We are not constrained to argue this point, but in default of the possible election of a purely dental representative, we shall be quite satisfied if on the next vacancy the Crown will appoint some prominent Dentist who can also well take a part in any of the general Medical questions which form the larger portion of the Council's business. We have previously discussed all this, and, having given a broad hint as to the duty of dentists in respect of the forthcoming election, we may briefly refer to another matter.

An elaborate and forcible correspondence has recently appeared in the columns of *The Lancet*. In the Ethical Section of the last Annual Meeting of the British Medical Association, Mr. VICTOR HORSLEY, the indefatigable President of the Medical Defence Union, drew attention to the extraordinary powers bestowed by the General Medical Council upon its President, and asserted that the direction of the whole procedure of the penal matters, whether professional or lay, was practically vested in him. Further fearless criticisms and suggestions followed to which Mr. BRUDENELL CARTER, as a self-constituted champion of the

Council, has since replied. The whole correspondence between such skilful foemen should be read, but we may note that on one contested point Mr. CARTER says, "Although there is no duty to prosecute, there is the power to do so ; and the question whether or when this power should be exercised is entirely one of expediency." Dealing with the question of Reform he writes :—"It seems to me certain that the Legislature will not look favourably upon the grounds on which alterations in the Medical Acts are now being sought, and will not be likely to sanction any changes which are obviously directed to the 'protection' of the profession. The business of the Legislature is the protection of the public ; and our business should be to make it clear that the evils of which we complain are evils which affect the community even more than they affect ourselves."

FIGHTING THE DENTISTS.—Our contemporary *The Chemist and Druggist*, is making a collection amongst its subscribers and, if favoured with a guarantee fund of two hundred pounds, is prepared to fight a "test case" as to the interpretation of Clause III of the Dentists' Act. There is little doubt but that the necessary promises of support will be forthcoming, especially as we gather that the noble bandylept "The Unregistered Dental Practitioners Association" is willing to subscribe. It seems that a recent decision in the Cardiff Police Court has caused much excitement amongst certain Chemists, some of whom being in the habit of extracting a thousand teeth per annum, fear that their craft is in danger. Others who conduct mechanical businesses to replace the lost organs are similarly affected. We intend to refer to this interesting phase of dental evolution at greater length on a future occasion.

AMERICAN DEGREES.—The *Daily Chronicle* says "The refusal to recognise certain American dental degrees in England is preposterous. The Americans are beyond compari-

son the best dentists in the world, and modern advance in dentistry is almost wholly due to their initiative and to their tools." We quite admit that in operative dentistry we have been taught much by our American cousins, and their methods and tools we have always been eager to try, and if found useful, we have always acknowledged the fact with gratitude. But as regards our examinations, we have a perfect right to say that certain knowledge shall be acquired and tested in a certain way, before our diploma is granted. Mere operative skill alone does not make a good dentist.

ARMY ENTRANCE EXAMINATIONS.—Amongst the new regulations for the examination of University candidates as officers we note the usual statement about teeth. The loss of ten teeth disqualifies, but carious teeth which have been satisfactorily filled will not count against the candidate. It would be well to have further information as to the views of the Examining officers upon such questions as contour fillings, root treatment, rhizodontropy, crowns, or even bridge work. We also notice that the case of volunteer recruits has been under consideration. The Under-Secretary of State for War is reported to have said that while it was not desirable to make the medical examination too strict, it was necessary to secure that men physically unsound as to sight, hearing, or chest, should not be included in the ranks. It is to be presumed that there is no teeth test for the Volunteers.

THE BRITISH ASSOCIATION.—Sir Joseph Lister took as a subject for his Presidential Address "The Inter-dependence of Science and the Healing Art." Amongst the illustrations which he brought forward, the first two were the Röntgen rays and Anæsthetics. Pasteur's work on fermentation came next and served as an introduction to a statement as to the introduction of antiseptic surgery. Sir Joseph had often been asked to speak upon the share he had taken in the

matter before a public audience, but had hitherto refrained, chiefly from a repugnance to what might seem to savour of self-advertisement. As he has now retired from practice this objection no longer existed, and the British Association had the privilege of hearing from his own lips a description of Sir Joseph's first experiments of treating wounds with carbolic acid. Vaccination, Hydrophobia, and Phagocytosis were other subjects dealt with in the address.

IMPORTANT DECISION UNDER THE MEDICAL ACT.—The Leeds stipendiary magistrate recently delivered judgment in a case where the defendant was charged with using the titles of oculist and aurist. The magistrate pointed out that it was not the object of the Legislature to establish a monopoly. The Act merely prohibited an unqualified person from passing himself off as a qualified practitioner, and the use of the terms "oculist and aurist" did not warrant an implication that the defendant was recognised by law as a medical practitioner. It seems, however, that by reproducing in a circular an extract from a local paper about his Eye and Ear Dispensary, the defendant, in the magistrate's opinion, had led the public to conclude he was a qualified medical practitioner, and that the gentleman of the press also thought so. A fine of £5 was imposed on the second information; the first was dismissed, and there was no order as to costs.

TWO GREAT TEACHERS GONE.—Sir John Erichsen, the celebrated surgeon, died at Folkestone on the 23rd ult., from the results of apoplexy. Besides his ability as a clinical teacher, he was well known as the author of *The Science and Art of Surgery*, which for over forty years has been recognised as a standard work, and of which more than forty thousand copies have been sold in this country alone. Commencing at University College as a student, he was at his decease its honoured President. At Cambridge on the following day died another distinguished man, Sir George Murray Humphrey, who was known not only as Professor of Surgery in the University, but also as an anatomist.

Abstracts of British & Foreign Journals.

PORCELAIN INLAY WORK.

By W. E. CHRISTENSEN, D.D.S., Munich.

Porcelain inlay work is far from being a new thing, and yet, because of the new process of making it, it can almost be considered a new kind of work. The old, tedious method of grinding a piece of porcelain so as to fit roughly into a cavity in a very conspicuous tooth, is well enough known to most dentists. The work took a great deal of time, and the results were usually far from satisfactory. There are cases, however, where even the best dentists would prefer such an inlay, imperfect as it may be, to the very best gold filling. Such cavities are those on the labial surface of the front teeth; while on the other hand, cavities which are still more conspicuous—as, for instance, large contours, in the incisors and cuspids—could not be restored at all with porcelain. The new method consists simply in taking an impression of the cavity with platinum foil pressing the foil into the cavity with balls of cotton, and burnishing it smoothly over the edges. By this method a matrix is made and at the same time an impression of the cavity is taken, and the inlay can be built and baked in the matrix so as to fit the cavity. In this way we obtain well-fitting inlays, and large sections, contours, and even projecting corners of the incisors can be restored a great deal stronger and a great deal better looking, and the operation can be performed with a great deal less trouble to the patient than would be possible with gold or any other material.

The chief objection to all kinds of inlay work is the belief that the cement with which it is set will wash out and leave an empty joint. This danger certainly exists, but though not entirely obviated, it is reduced almost to a minimum by the high degree of fit and contact which can be obtained by fusing or “casting” the inlay for each special cavity. The heaviest foil used is No. 60; skilful operators will soon be able to use much thinner foil, but even with No. 60 the inlay can be made so as to leave no joint at all. This is done simply by bevelling slightly the walls of the cavity outward

from the margin, so that when the platinum is removed the inlay will fit tightly on the bevelled edges of the margin, thus taking up the space occupied by the platinum and making a perfect fit at the margin. To accomplish this the inlay need not rest on the bottom of the cavity, but should only extend sufficiently into the cavity to be retained. When I make inlays in the molars, which I do only for very large cavities, believing that in this way I obtain the nicest and strongest fillings with the least trouble to the patient,—I use very heavy foil for the matrix, say No. 60, and after removing the foil I set the inlay with cement, cleaning out the joint, however, with a pointed excavator before the cement is quite hard; or I let it get hard and then clean it out with a very fine bur, and fill it up with amalgam, which entirely prevents any washing out of the cement.

The methods of retaining the inlays are several. When only one wall has been destroyed, as in labial cavities, the inlay, of course, cannot be made to extend into an undercut. Undercuts may be made, but only after the impression has been taken, and merely enough to hold the cement. The inlay, however, can be made with a retaining groove in the inlay itself, by placing a ball of hardened plaster of Paris on the bottom of the matrix before introducing the body, and scraping the plaster out again after the baking. In this way the cavity holds the cement, and the cement holds the inlay. If the case is that of a corner contour, the inlay can be made to extend into one undercut, which must be made as wide and deep as possible, into the cervical portion of the tooth, provided the tooth is not a dead one, in which case, of course, the inlay can be made to extend into the pulp-chamber. Inlays in the large molar cavities are usually sufficiently retained by merely extending into the cavity. The retaining groove may be made in the inlay itself, or, if the tooth is a dead one, a pin from a porcelain tooth can be baked into the porcelain so as to extend into the pulp-chamber.

The baking of the inlay is a simple process. The porcelain is obtained in the form of a fine powder, like the body for continuous gum work; it is mixed with distilled water to a cream-like consistence, and applied with fine camel's hair brushes. For its first introduction into the matrix I use a fine-pointed steel instrument, so as to make sure of getting it into every corner, also because in this way it is easier to reach the bottom of the matrix without touching the edges. At the first and second baking the edges must be left free on

account of the contraction of the body, and for the same reason the body in the matrix should have a convex surface as otherwise it is apt to contract the matrix and change its shape. At the last baking only the body should touch the edges of the matrix. The edges of the matrix serve as a guide for the correct shape of the inlay, and when a large section is to be made the correct size and shape are produced by repeated bakings, and by gradually adding body until the desired contour has been obtained. In making the matrix a piece of foil must be used sufficiently large to be folded into a triangular shape, or better, into the shape of a funnel, which is introduced into the cavity with the point towards the deepest portion. The foil, when pressed against the walls with balls of cotton and a pair of stump tweezers, will spread to the walls without tearing. The burnishing of the edges should be done by hand pressure only, using a stone burnisher. A piece of india-rubber finally pressed over the entire edge with a uniform pressure will secure a most exact impression. The overlapping foil must not be cut away, but is left on during the process of baking. The matrix may be invested in plaster and silex, or plaster and asbestos; if this is done, it will take one to one and a half minutes longer to fuse the porcelain. I usually get the best results by not investing the matrix, but for the student or inexperienced operator it is safer to use the investment.

Dental Digest.

WASTED FOOD.

By Dr. GARRETSON.

One thousand pounds of whole wheat grain contain one hundred and fifty-six pounds of muscular matter, twenty-five pounds of fat principles, one hundred and seventy pounds of bone matter. One thousand pounds of fine flour, one hundred and thirty pounds muscular, twenty pounds fat, sixty of bone principle. Accordingly the whole grain is one-half more nutritious than fine flour; it also shows the great proportion of bone material, that is earthy constituents, contained

in the bran on less than seven hundred parts out of a thousand, or a little more than two-thirds of the whole. The weight of the bran, or outer coating, would therefore, in the common superfine flour, constitute the offal, weighing only five and one-quarter pounds to the barrel of flour, while the ordinary weight of offal is from sixty-five to seventy pounds. Now if we estimate the earthy constituents to be two-thirds of the offal or bran, we must consider that there is an actual loss of these important constituents which might be reserved in every barrel of flour of forty pounds.

If we estimate a half-barrel a year to each child,—and this is only four or four and a half ounces per day, a very small allowance,—we find that the child is deprived of twenty pounds of bone and tooth-forming principles, and this is done by the use of such flour as most families use ; even the oatmeal, unless that of Scots, is deprived of its outer coating.

CANCERUM ORIS—A CASE IN PRACTICE.

By J. P. SHAW, D.D.S., Burkesville, Ky.

Because of Cancrum Oris occurring so rarely in an adult I have prepared this paper. All writers treat this disease as one peculiar to children in crowded districts, where the lack of fresh air and a healthful diet, together with scrofulous and syphilitic tendencies, act as predisposing causes, and cite only a few cases where gangrene occurs in adults.

It is not my intention, however, to attempt a treatise on Cancrum Oris, nor to embellish my paper with high-sounding phrases or technicalities, but as concisely as possible to detail the case as it came under my observation. This paper is a compilation of notes taken by myself and Dr. W. C. Keene, the physician in charge, and the case is as follows :

The patient was about thirty-five years old. For several years he had lived in Southern Missouri and in Arkansas, returning to this, his native state, a few months previous to his illness. His occupation was that of a "cropper," or farmer on shares, his life consequently an active one. His

diet was very plain, consisting chiefly of cornbread and pork. At this time he was apparently in good health.

About the last week in May he had a left inferior first molar extracted by a physician. A few days later he sent for the same physician, complaining of a sore mouth for which no relief was afforded. On June 3rd, Dr. W. C. Keene was called in and later myself. An examination resulted in the diagnosis of gangrene, and the disease was found to be considerably advanced. The cheek, as well as the gum-tissue, was involved, the sloughing was very great, and the discharge offensive.

All of the part involved was thoroughly scraped and all appearance of diseased tissue removed, and the part was then well cauterized with nitrate of silver. A nourishing diet was ordered and a tonic of iron and quinine prescribed. At the second visit the socket of the tooth, where the destruction had been greatest, was again scraped and an application of tinc. muriate iron made. A mouth-wash of tinct. myrrh, Listerine, and Condy's fluid, was ordered to be used *ad libitum*. This course of treatment was followed with very happy results, as healthy granulation was established and a decided general improvement. June 10th patient was dismissed, as he was sufficiently convalesced to resume his work on the farm.

On June 18th the case again required attention, and an examination showed that the disease had progressed to an alarming extent. An attempt was again made to remove the sloughing tissue, but it was fruitless because of the extent. The former treatment was resumed as far as possible, but without any good results, the patient dying July 2nd.

The general condition of the patient during the progress of the disease will perhaps be interesting if not instructive. At no time was there a perforation of the cheek, and the extension of the disease was confined principally to the left side, although all the tissue of the oral cavity was affected. By introduction of the probe it was very apparent that the osseous tissue was not only denuded but must have been acted upon. It seemed as if the probe would extend almost to the orbit, but an examination, or any attempt to treat the jaw, was so painful that it had to be given up during the last few days, when the disease had progressed to its greatest extent. Because of the swelling and distortion nothing could be determined except by examination with an instrument. The gums extended over all the teeth in both the upper and lower jaw.

From the period of relapse the glands of the neck were

swollen and the face greatly distorted. Later the glandular system throughout the entire body was involved, seeming to be greater on the left than on the right side.

The patient complained of fainting spells at night and of a constant severe headache. I cannot state the condition of the bowels, but heard no complaint of diarrhoea, as seems to be true of children similarly affected.

No hæmorrhage occurred at any time except when diseased tissue was being scraped. There was a constant expectoration of a fibrous greenish discharge, which was unbearably offensive during the last few days.

Nothing could be ascertained from family history as a predisposing cause, and from all the indications this seems to have been a true case of Cancrum Oris.

Dental Digest.

THE INDIA RUBBER INDUSTRY IN SOUTH AMERICA.

The world's consumption of india-rubber has been growing so enormously during the past few years that the time does not seem to be far distant when the demand will exceed the supply. Already the difficulty of getting a sufficient quantity of rubber to meet current needs has led consumers to fear that there will be an early famine. One of the chief causes of this heavy increase of consumption is, of course, the employment of the material in the bicycle trade, and long before the limit has been reached in that direction another scope, that may be quite as wide and general, will be opened up in the use of pneumatic tyres upon vehicles of all descriptions. The United States is the largest consumer of india-rubber at the present moment, but that country is run pretty close by Great Britain. The other markets follow a long way behind, but the amount imported by France and Germany is no mean proportion of the trade done in this material.

It is certain that the threatened famine in india-rubber, or, more properly speaking, caoutchouc, would not be so imminent as it now is if the owners of the plantations in West Africa and elsewhere had been a little less reckless in their method of tapping the trees. In order more easily to get at the milky

juice it has long been the custom in West Africa, and in some of the South American States, to cut down the trees bodily, so that the collectors only secured one lot of caoutchouc from each tree instead of a large number of periodical yields. The prevalent idea that this policy was justified by the almost unlimited range of forests producing caoutchouc was very soon found to be groundless, and, now that it is too late to have any immediate effect upon the supply, stringent regulations have been made in many countries to prevent the cutting down of trees, and owners are going to a great deal of expense in laying out new plantations, which must, however, take several years before they come to maturity. In the meantime efforts are being made to compensate for these limited supplies by producing artificial india-rubber, and several new processes have lately been brought out in France and Germany, though without as yet producing india-rubber of a suitable quality upon a commercial scale.

The most obvious way of meeting the demand for this material is to give more attention to some of the other rubber-producing trees that are to be found in considerable quantities in South America and elsewhere. At the present moment French capitalists are trying to make profit out of the scarcity of india-rubber by utilizing the balata, which for many years past has been employed upon a small scale for a variety of purposes. There are at least two descriptions of balata, the one white and the other red, the latter being known in the English colonies as the "bullet tree," a corruption, no doubt, of the native word "bolletrie." The species being exploited in French Guiana is the *Mimusops balata*, a magnificent tree which is peculiar to all the Guianas. It attains a height of from 90 to 100 feet. The wood is very much sought after for cabinet-making on account of its beautiful colour, while it has also the property of resisting the depredations of insects. These merits are almost fatal to the existence of the tree as a rubber-producer, and in some of the South American States forests are being cut down without any regard to the profit that can be secured by tapping them in an intelligent manner. In Venezuela the tree is also to be found in great abundance, and, in point of fact, it grows very freely in the mountainous districts of the northern States of South America. Nevertheless, in British Guiana immense forests are found in the low-lying districts of swampy Canje. In a report on the balatas published a little while ago by M. Hayes, a colonising agent, it was said that there was a sufficient expanse of forest in the

Guianas to allow of the exploitation of rubber being carried on for centuries. It was, however, necessary that something should be done to prevent the wholesale destruction of the *Mimuseps balata*, which would very soon disappear if allowed to be cut down indiscriminately for its wood, and one of the richest and most prolific resources of South America would thus be destroyed. In fact, both in Venezuela and in Dutch Guiana the trees are cut down with a view of collecting as much of the juice as possible, and in French Guiana the same process was for a long time employed. When the trees are thus felled, circular cuts are made every 12 inches, and receptacles are placed underneath to catch the juice. The bark is also sometimes removed from the tree and the juice extracted from it by presses.

In British Guiana it is only allowed to tap the trees without felling them, and a similar restriction is now imposed in the neighbouring French colony. The English method of collecting the rubber is to make horizontal incisions half way round the tree and connect them with a vertical channel to allow of the fluid flowing down into the receptacle, but a better method is said to consist in cutting out rectangular pieces of bark from which the juice is extracted by presses. Alternate rectangles must of course be left on the trunk, and these can be removed at the next tapping, when the exposed parts of the tree are sufficiently healed. To secure perfect vitality in the tree it is preferable to tap it over a third only of its circumference every five years. If properly carried out the collection of balata rubber is a very profitable industry indeed. One traveller in French Guiana, who was accompanied by three men, collected 666 litres of juice in 119 days, which produced on coagulation 360 kilos of rubber. Had the men been able to give their time exclusively to the collection of rubber there is no doubt that the amount would have been doubled or trebled. It is, indeed, estimated that a single balata will supply a kilo. of rubber every year without suffering to any appreciable extent from the tapping. The system usually employed for securing coagulation is to pour the liquid into large shallow pans about four inches deep. A hard crust very soon forms at the surface, and this is removed to allow of another crust forming, and so on until the whole of the juice is solidified. The crusts are then hung on lines to dry. The balata rubber, though perhaps slightly inferior to caoutchouc for certain purposes, and notably as an insulating medium, is yet specially adapted for a great many uses, such

as machinery belting, mackintoshes, surgical appliances, etc., and its merits are so far recognised that a considerable trade has grown up during the past two or three years in the Guianas. While the exports of balata rubber from British Guiana in 1881 were only 41,000 lbs., in 1889 they were no less than 363,480 lbs, and though the total fell in 1892-93 to 237,450 lbs., the value has been rapidly increasing, and for the two years named was £20,605. In Dutch Guiana the industry has not been carried on in such a systematic manner. Nevertheless, two American companies are exploiting the balata on a large scale, and are sending the product to the United States. That the industry can be made a very profitable one is seen in the price paid for the rubber, which varies, in Paris, from 3 francs to 8 francs a kilo, according to the quality. It is evident, therefore, that while industrial enterprise is under a cloud in South America, it may be to the interest of capitalists to turn these balata resources to account, the more so as rubber is one of those rare things that are not likely to suffer depreciation to such an extent as to make its production unremunerative.

South American Journal.

NATURAL ENAMEL INLAY.

Dr. A. H. Wallace contributes an article to the *Stomatological Gazette* from which we take the following abstract:—

“I commenced the practice of placing natural enamel three years ago, getting the idea at that time from some work by Dr. Younger, and have been performing the operation more or less since without a failure.

Many sceptics will question the durability of such work, and cite the decay of the enamel, the washing away of the cement, and the breaking away of the inlay from its anchorage as objections. The first of these objections is very well taken, for the enamel is liable to decay; but if it should decay in three to five years (and I say this would be a good limit to healthy enamel), take it out and put in another piece, and the patient will be well repaid for the years he has been exempt from the glare of gold. The other objection—the washing away of the cement—cannot be considered as such,

as there is no cement to wash away in a properly fitted inlay ; and if there is, watch it, and have it replaced before the decay commences. The last objection, breaking away from its anchorage, is liable to occur if we use poor cement and are careless in its mixing and setting ; but this will never occur in proximal cavities where the cutting edge is not involved. In cases where the cutting edge is involved to the extent of one-half or one-third of the tooth, resort to a gold pin for better anchorage.

An inlay is applicable to four kinds of cavities ; proximal cavity in the front teeth, with or without involvement of the cutting edge, in labial and buccal cavities. When the cutting edge is not involved, and inlay well fitted it will last a life-time. When the cutting edge is involved the case becomes of a most serious character, and inlay depends wholly on the anchorage for its stability. In this event, I make the inlay as large as possible, without cutting away too much of the tooth, and make a perceptible shoulder at the cervical boundary.

On the labial surface, when properly fitted, the inlay will last longer than gold. In a case where I have restoration of one-half or one-third of a tooth, I depend on one or two gold pins for anchorage, and the placing of a whole natural tooth crown on the front teeth is very effective.

The advantages I claim for this are : *first*, the natural colour assumed from three days to two weeks after the operation, the same as implanted teeth ; *second*, the natural contour of the tooth restored ; *third*, strength, non-friability ; *fourth*, the artistic value when properly done.

The methods I sometimes use to obtain these results are, *first*, rotation of the tooth with ligature (Younger's method) so as to bring the mesial surface to the front, spreading the teeth with cotton tape ; porcelain inlays in small cavities ; and, if tooth is dead or discoloured, bleaching to normal colour with pyrozone.

In selecting a tooth to cut inlay from, care should be taken to get a tooth as near the size and shape of the one to be operated upon. This can be determined by the aid of calipers. After selecting the tooth, give it a bath of iodine to cleanse it and then let it remain in a solution of bichloride of mercury (1 in 2000) for twelve hours. The *modus operandi* after this is to grind with fine stone to approximately the size, then mount it with shellac to an instrument so as to give access to cavity.

A perfect fit can be obtained by smearing the cavity with rouge and oil, and by placing the inlay in it, grinding away a little of the inlay at a time just where it comes in contact with enamel walls. After it is fitted wash out cavity with soap and warm water to remove oil, then thoroughly dry and, using best cement, cement to place, care being taken not to displace inlay after it has begun to set. Trim off so as inlay will not strike antagonizing teeth, and you will have a filling that will last as long as gold, and will be a pleasure to yourself and patient.

Ohio Dental Journal.

FILLING A TOOTH WITH AMALGAM.

By W. M. JENNINGS, D.D.S., Cleveland, Ohio.

For example I will use a second lower left molar tooth, with a posterior proximal cavity extending considerably under the gum and involving about two-thirds of the crown. Of course, from the size of the cavity, the nerve would be exposed, and having removed it and filled the roots properly, I would proceed as follows :

Prepare the cavity, having the edges smooth and the inside slightly larger than the opening ; then fill it about two-thirds full with a good cement and allow it to harden. After this, trim the edges of the cavity, so that no cement adheres to them, and also trim the cement inside just enough to leave a sufficient undercut and space to allow contouring of filling. Now select a screw matrix of suitable size for tooth (German silver or steel are best, as they do not amalgamate) and put around the tooth, crowding down under the gum sufficient to go below the edge of the cavity, but before tightening put another piece of German silver between the tooth and band matrix, also below the edge of the cavity ; now tighten the band. Before putting in the filling, take an excavator and trim the borders of the cavity and remove all roughness of edge next to matrix, if any has been caused by putting it on ; we are now ready for the filling. Mix the amalgam very dry, having it resemble an almost dry powder, and carry it to the cavity with a small amalgam spoon ; press a

small quantity into the cavity with a plastic plugger of the proper size; now with engine use a small-sized (smooth, round) burnisher and rotate it quite rapidly in cavity. Add more amalgam and use burnisher same as before, and do so until the cavity is full and the amalgam is quite hard; then with a larger burnisher rotate it rapidly over a piece of tin-foil placed on the filling. Trim the filling down and carefully remove first the screw matrix, then the other one. Now trim the filling as near as possible to the original shape of the tooth, seeing that the articulation is right. Polish at another sitting. A filling put in in this manner is much better and more satisfactory than by simply using hand-pressure, and does not change position in crystallization, as in the other way, as the tin takes up all excess of mercury, leaving the filling almost hard after it is inserted.

Ohio Dental Journal.

MEDICINAL TREATMENT VS. EXPERT MANIPULATION IN DENTAL PRACTICE.

By J. D. PATTERSON, D.D.S.

The intention in this article is to show that too much dependence is often placed upon drugs in the cure of pathological conditions in the oral cavity. I will not attempt to deny that in the treatment of oral diseases the most rapid and permanent cure is often brought about by medicines, and that success could not be reached without them, but will also claim that they are often used needlessly and copiously to cover the lack of expertness and to the injury of tissue. The extraordinary increase in the employment of therapeutic agents in dental practice has been brought about, in the first place, by the investigations made in bacteriology. Nearly all distinct pathological conditions, it is now recognized, owe their presence, in one stage or another, to a specific micro-organism, without which the disease would disappear. In the dental field we have the micro-organism of fermentative processes and caries. In alveolar abscess no pus is secreted without the presence of pathogenic bacteria. We find particular forms of spores in diseased and putrid pulps. In

pyorrhea it is supposed that we detect a special micro-organism even in certain discolorations of decay and stains we have chromogenic micro-organisms.

It is, then, not wonderful to find the dentist who is informed that all diseased conditions are due to bacteria, laying in a stock of antiseptics, germicides and disinfectants equal to an apothecary, and dispensing them with equal ignorance of their use or abuse. He is found to dose for stomatitis the same as for stomach-ache, in a laudable attempt to kill the bugs which he is told causes all the trouble.

Another reason for the increased use of medicines by the dentist is the desire to appear as a medical specialist. We are medical specialists — then, forsooth, we *must* dabble in medicine, or our titles will fail. So I conclude that here lies another chief reason for the prevalence of medicine-using in dental practice. Dentists forget that the surgery of dental practice will entitle them to rank as specialists without the giving of medicines.

Again, I believe that medicines are often relied on for a cure because of inexpertness in manipulation. Give me the dextrous operator who is not afraid of hard work, whether it be in cleansing a pulp canal or doing the surgery in a case of pyorrhea, and I will trust him for a cure where the man of medicines will fail. A great need in dentistry to-day is a class of men who have been mechanics or mechanic artisans before entering upon the practice of dentistry; who have that dexterity in the handling of tools that can only come through long use. Our ranks and our colleges are full of students who cannot sharpen a lead pencil, square two edges of a board or make a dowel to fit a mortise. So we see them, instead of going into such training, lean upon therapeutics. The bacteria in a pulp canal will be deluged with a dozen different germicides, instead of being removed with the delicate touch and without leaving broken broaches. The calcic deposit in a pyorrhea pocket will be approached with syringes charged with all kinds of dissolvers and bug-killers instead of doing a good deal of solid manual labour in removing irritant matter with the hand, guided by scientific knowledge of the tissue worked upon.

The proposition may be laid down in regard to medicines in dental practice as follows; The employment of antiseptics, disinfectants and stimulants should follow after expert manipulation has mechanically removed every possible polluting presence, and then only in such quantities as are necessary,

and give no injury to tissue, or prevent repair tissue forming. In the treatment of pyorrhea, after the surgical operation which has removed all trace of irritation, and the antiseptic has destroyed what cannot thus be reached, then a gentle stimulant used, Nature at once endeavours to repair the waste. The germicidal nuclein which has been proved to exist in the blood, may safely be left to take care of all else save extraneous irritation. In these circumstances, how unwise it must be to institute daily or every other day, continued syringing and interference, which will break up and destroy formative tissue, which is being built up from the plasma. The use of medicine in these cases should end when the territory is freed from poisonous matter, and only strict hygienic measures be kept up.

In the treatment of alveolar abscess, when the irritation is removed, in the majority of cases repeated dosing of the part is ill advised if good drainage is well established. In chronic cases, however, it is necessary to repeat the medicinal treatment. The criticism, however, we do claim stands good, that in the vast majority of cases over-treatment is practised. Every case of a particular class of dental troubles receives the stereotyped treatment, whether it calls for it or not. To the average practitioner, an alveolar abscess of one day's standing is treated the same as one of a year's standing, when in the first case all that is needed is expert manipulation and one exhibition of the germicide.

The fault underlying the abuse of medicines lies in subjecting all pathological conditions to an empirical routine treatment without regard to the history of the case. The lack of knowledge to diagnose a case, and thus be able to select the remedy with the proper remedial action, if remedy is needed, is what we believe justly subjects the dentist to criticism.

Western Dental Journal.

IMPLANTATION.

By Dr. W. J. YOUNGER, San Francisco.

Somebody asked me a year or two ago if I had abandoned the implantation of teeth, and the reason he gave was that he had heard nothing on the subject from me for a number of

years. I said the reason I had not written about it was that I had given it to the profession years ago, and was simply now waiting for time to show how far the operation was successful.

The first case I had was a young maiden, an Italian. This, to my surprise, remained in eighteen months. All her friends came up and shook the tooth, and found it had become as firm as the others.

My next case was the 17th of August succeeding. I planted five teeth, two of them on that day, the 17th, one a week later, one about the 1st of December, and the fifth one, a molar, in the year following. So that leaves four teeth that have been in four years, one over ten years, and one ten years about the first of next August, and they are all in perfect condition. A year or two ago, Dr. Daboll, of Paris, saw them, and he could not determine the implanted teeth, or distinguish them from the original teeth.

There are quite a number of other cases that are from nine to ten years of age that are in excellent condition.

A week or so before I left, a lady visited my office and complained that one I planted for her nine years ago was loose. I examined it and found what I supposed was a case of resorption of the root, so I made an appointment, and prepared a tooth for a case of transplantation; when I started in to remove it, I found to my surprise a solid tooth. The one that had been planted nine years last April was in perfect condition. This shows that the operation is a permanent one; that is, if an operation will last ten years, you may look upon it as permanent. It promises, in the case I have mentioned, to last a lifetime, because there is nothing to indicate in appearance that there has been any absorption at all.

I had a case where a lady came to me to have a tooth implanted, a right superior bicuspid; this was nine years ago, and I defy any dentist to select that tooth by observation or by resonance. She had one tooth out, the second superior bicuspid; another one was diseased at the root, and she decided to have that one out and one implanted, and I performed this operation four times before I succeeded.

TUBERCULAR ULCER OF TONGUE.

By Dr. HECTOR C. CAMERON.

Dr. Cameron showed a patient with a tubercular ulcer on his tongue, and said that a few months ago another patient was recommended to his care by a medical friend, suffering from a small ulcer on the under surface of the tongue, between the tip and the attachment of the frænum. The ulcer was comparatively superficial, grey on the surface, and with little or no surrounding or underlying induration. Both the appearance and the situation of the ulcer led to the conclusion that it was not likely to be an epithelioma. The lower front teeth of the patient were rather sharp and jagged, and he was recommended to have them filed by a dentist. He returned after several weeks. The condition of the teeth seemed now satisfactory, but the sore had increased rather than diminished. The sore and immediately surrounding portion of the tongue were then excised, and, on examination by Dr. Sutherland in the pathological department, was reported to be tuberculous in character.

The patient had a chronic cough and spit. Further examination showed that the apices of the lungs were the seat of disease, while the sputa contained abundant tubercle bacilli.

When the patient now shown came to hospital, his case was so like the other that Dr. Cameron was led at once to conclude that it was of the same nature. The ulcer was larger, but was situated in the same part of the tongue, and had the same appearance superficially. The ulcer, when the tongue was protruded, came into direct contact with a roughened and irregular tooth edge. The patient was the subject of chronic phthisis, and the sputa contained the bacillus of tubercle in abundance.

In both cases the patients, during coughing, had abraded the under surface of the tip of the tongue (just as may occur in whooping-cough) at the frænum, the irregularity of the teeth rendering this occurrence all the more probable. Subsequently auto-inoculation of the abraded surface with tubercle occurred through the medium of the sputa. In this way Dr. Cameron accounted for the tubercular ulcers in this situation in these two patients, and in some others to whose cases he referred.

Glasgow Medical Journal.

GOLD FILLING.—CONSIDERATION OF MINOR DETAILS.

By P. G. WOOD, D.D.S.

In considering the subject which has been assigned me, it seems wise to leave its more weighty phases for discussion by those who have new and original ideas to present, and I shall, therefore, content myself with simply calling your attention to some of the minor details; little things, which, when slighted, are the cause of many an imperfect gold filling. It is axiomatic that the perfection of any operation is largely due to the careful attention given to details, and gold filling is not an exception to the rule.

Taking a proximal cavity in a superior incisor, as a typical one for consideration, the first point to claim our attention is to see that the teeth are thoroughly polished and cleansed of all débris that may have collected between them or around the gingival borders. Now, it is a well known fact that a tooth is less sensitive when thoroughly dessicated, so it is better to adjust the dam before any excavating has been done, and in placing it in position let it embrace a large enough number of the adjacent teeth so that it will neither obstruct the light nor be in the operator's way during the remainder of the operation. A doily placed underneath the dam to keep it from the patient's face, will not only be duly appreciated by the patient, but will also tend to the successful completion of the filling, for anything that places the patient more at ease aids the operator. Further dessication of the tooth by the use of warm air will lessen the sensitiveness, and also aid us in detecting all unsound tooth structure. Now gain free access to the cavity, so that all parts can be plainly seen either by direct or reflected light, preferably of course from the palatine side; but it is far better, if necessary, to sacrifice some of the labial wall at the expense of the gold showing than it is to court failure by working in the dark. And I would urge the desirability of having the teeth slightly separated, if naturally very close or crowded. A few fibres of cotton packed between the teeth at the time the examination is made, should it be a few days prior to the operation, will greatly simplify it for all concerned, then when the teeth return to their normal position we will have the natural lateral contact, so much to be desired.

In shaping the cavity avoid all sharp angles in the margin, or deep pits within. Let graceful curves abound, and make sure that the margin of the cavity will be free, so as to be not only easily kept clean, but as nearly self-cleansing as possible when the teeth return to their natural position. A great mistake is often made, and subsequent failure invited, by leaving the palatine wall intact to build the gold against. Better cut it away and replace with gold than leave it to be broken out by the occlusion of the lower teeth in mastication.

Finally, before packing the gold, carefully polish the margin of the cavity with a medium fine strip, for a much closer adaptation of gold can be made to a smooth surface than to a rough one. In packing the gold let small pieces and small instruments be the rule, filling the most inaccessible portions of the cavity first, always keeping the filling, as it progresses, as nearly level as possible.

It is unnecessary to speak of properly contouring the gold, but it will not be amiss to caution against ruining a nicely contoured filling by using too large disks or wheels, and too wide strips in finishing. After the gold is packed burnish thoroughly from the middle toward the edges of the filling and repeat often during the use of strips or disks. Many a filling might be improved if this was thoroughly done.

And having ascertained from the dental supply agents that a very large proportion of the disks used by a majority of operators were of the larger varieties—above one half inch in diameter—I would emphasize the statement by repeating that the large disks and wide strips are to blame for the *flat* condition of many of the fillings we see, which should be nicely contoured. And I conclude with the assertion that the greatest cause of all the imperfections in our gold fillings is not the operator's lack of ability to do better work, but it is due to carelessness in the minor details of the operation.

Ohio Dental Journal.

Bellencoutre (Jour de Med. de Paris, December 22, 1895) suggests the use of a new anæsthetic, the oil of guaiac, in all operations on the eye and its appendages, excepting those on the cornea and anterior chamber. The solution he employs is 1 gram of crystallised guaiac to 10 grams of sterilized olive oil. He introduces the needle of the hypodermic syringe into the part to be operated on, and while slowly withdrawing it deposits two or three drops of the solution into the tissue. Anæsthesia is produced in eight or ten minutes, and is continued twenty-five minutes.—*The Philadelphia Polyclinic.*

A PLEA FOR A GREATER USE OF NON-COHESIVE GOLD.

By J. N. CROUSE, D.D.S.

Having read various papers on the use of gold and the filling of proximal cavities, I have been alarmed at the apparent disuse of an old but very reliable method, namely, the use of non-cohesive gold in the form of tightly rolled cylinders, which is the wedge principle. These cylinders are best made from No. 3 or 4 gold foil, which should be non-cohesive. If it has any cohesiveness, that should be removed by placing the foil in a drawer with aqua ammonia for a few hours. To make the cylinders, fold the gold leaf upon itself until you have a ribbon a little wider than the depth of the cavity at the cervical margin. Having filed a broach to a triangular peak, lay it on one end of the ribbon and turn gently, when the gold will be wrapped around the broach, making cylinders a little more in width than the depth of the cavity. These cylinders are made differently for various cases. In large cavities the first one or two may contain a sheet of No. 3 foil, the rest less; some rolled quite tightly on the broach, others less so. With a variety of cylinders thus prepared we are ready to fill well a large proportion of the cavities which occur on the proximal and buccal surfaces of bicuspid and molars, and in one-fourth the time required to make as safe a filling with cohesive gold. About the same amount of time and painstaking effort is needed in either case to prepare the cavity, but it is shaped somewhat differently for non-cohesive gold, and especially for cylinders as described. There are no pits drilled in the dentine from which to start the filling, and the cervical walls need be but little undercut, as strength of anchorage when the cavity is completed is depended upon toward the grinding surface, this being the point where the greatest strain comes on the filling by force of mastication. The lateral walls usually have sufficient undercut when the decay is removed, or if not, slight grooves or undercuts should be made.

With the cavity prepared, and where the walls are of good strength it is a waste of time to use cohesive gold for any except the latter part of the filling, and then only in cases where it includes part of the grinding surface. Select a cylinder which when placed lengthwise will extend a little

beyond the cervical margin, or in cases of large and deep cavities one large and long enough to rest against the opposing tooth and to entirely cover the cervical margin, and start your filling. In extreme cases two sheets of No. 3 made into one cylinder can be used to good advantage. Generally, however, a large cylinder on each side and a smaller one between the two makes a good foundation. Always remember at this point not to condense each cylinder separately, thus crowding them apart, but a place should be made for the next one, which should be rolled tighter and of a size that will occupy the place as a wedge. Continue until the cavity is about two-thirds full, when, if it is required, cohesive gold can be driven into and between the cylinders at different points, and then the whole mass of gold, being for the most part non-cohesive and so quite ductile, may be forced into every crevice, making a very perfect filling. On top of the cohesive gold already in the cavity we can readily add more and so continue the filling over and on to the grinding surface, contour and finish.

Dental Digest.

TO BRIGHTEN UP INSTRUMENTS.

By W. J. MILLER, Chicago.

To brighten and make nearly as nice as new, rubber-dam clamps that have lost the plating and become rusty and discoloured, dip them in a bath of sulphuric acid, then remove, and with brush-wheel and pumice make bright. Wash clean and dip in a strong solution of cyanide of potassium, and they are ready for the plating solution. This is made as follows: Put in a six-ounce bottle about ten cents' worth of nitrate of silver and four ounces of soft water. When thoroughly dissolved, add strong solution of common salt till the curdled appearance given by the salt ceases to form. When settled, use the clear portion for a battery. To make a simple and inexpensive battery, put the liquid in a glass tumbler; having two narrow strips of zinc, one to hook on to the edge of the tumbler, the other to hold the clamp or article to be plated in solution. On the upper end or hook of the zinc strip to hook on the side of the tumbler, soft-solder a piece of copper wire

long enough to reach across tumbler and half-way down the opposite side ; and on the other end of the wire solder a ten-cent. piece of silver for an anode. Put sufficient plating solution in the tumbler to cover the articles to be plated, leaving them in for fifteen or twenty minutes, or till nicely covered. Now remove and with brush-wheel brighten them. Repeat as many times as you wish ; each time gives an extra plating. Other uses will be suggested ; for nothing is more attractive in a dental office than bright, clean instruments.

Items of Interest.

WHY AMALGAMS FAIL.

The following is an extract from a lecture by Prof. Chas. Steel, on "Metals and Their Behaviour When Alloyed."

"Let me impress upon you to use only metals of known degrees of purity. I have frequently called your attention to the remarkable results produced in combining metals—how the union of two *soft* metals will sometimes produce a *stiff*, *refractory* alloy ; how two metals, behaving well in the mouth separately, may, when alloyed, be acted upon most disastrously. *A very small per cent.* of some metals will frequently change the entire nature of an alloy. We may doubtless account for the apparently inexplicable failures of good amalgams under some circumstances by the impurity of the mercury used. All native mercury contains lead in varying proportions. It is most difficult to extract this metal entirely from the mercury. Lead, even in minute quantities, exercises a most deleterious effect on amalgam fillings, and indeed on nearly all the finer metals used by the dentist. See to it, then, that the mercury you use in your amalgam is as absolutely pure as it can be obtained. While speaking of mercury, it just here occurs to me that this metal may in another way cause the variable results sometimes obtained from the same alloy. You know that when we undertake to combine the mercury with the alloy, it seems almost impossible to get a perfect solution without using an excess of mercury, which excess is frequently pressed from

the mass. It is doubtful whether it is mercury alone which is thus pressed out, but more than likely that it is combined with some portions of the other metals. It has greater affinity for some metals than others, hence brings away different proportions ; so if too great an amount of mercury is used, we may seriously injure a nicely adjusted alloy.

Bi monthly Bulletin.

THE TEETH OF THE POOR.

We are pleased to notice that at the meeting of the British Dental Association in London, a report of a Special Committee was presented drawing attention to the need of systematically dealing with the teeth of Poor-law children. It is to be hoped that the authorities will take practical notice of the suggestion, for the condition of the teeth in childhood is closely related to the development of physique and the maintenance of digestive health, two essentials for those whose main stock-in-trade is their bodily strength. In Belgium, not only the State-supported but the State-educated children are subject to periodic inspection by qualified dental inspectors, who are part of a staff of fifteen medical men especially employed to supervise the children's health as well as any circumstances of their environment which are likely to injuriously affect their hygienic condition. Belgium is a small State, not so wealthy that it can afford to be wasteful of either its people or its money ; and it, therefore, adopts the principle that it is both cheaper, as well as more humane, to protect the health of those who, if it fails, will ultimately become a burden to the State. Some slight effort is being made by Toynbee Hall, as well as by other philanthropic bodies, in a similar direction to that of the Belgian authorities, the object of the association being to provide a trained nurse, who will be in attendance for given periods on certain days in the week, at the large neighbouring schools ; her work being to bind up cut fingers, hear about trivial ailments, see sore throats, and direct the ailing to seek the doctor's aid or the dentist's skill. In England many State organisations have been pioneered by volunteer efforts, and this may be another example of the same method of procedure.

British Medical Journal.

EXCAVATORS VERSUS BURS.

By F. E. BATTERSHELL, D.D.S.

The present tendency seems to incline towards the disuse of excavators and more and more in favour of burs. Some operators go so far as to depend altogether upon the engine in the preparation of cavities for filling. This new habit we think is reprehensible, for several reasons: first, excavators remove carious material more rapidly and thoroughly. After burring out a cavity as carefully as can be done, one does not *know* the precise condition without having examined the walls with an excavator. Such search often reveals a branching cavity sometimes as large or even larger than the first; and always discovers carious material beyond the range of engine drills. The rotating process of drilling is so unlike the sweeping effect of cutting with the excavator, that what is run over with the engine drill, is easily turned out and swept away by the excavator. Another valuable point of difference is, that the excavator can always be sharpened and kept sharp, while the bur is becoming progressively duller; consequently when much used, instead of cutting it only rubs. The touch of the excavator is much more sensitive, which is a very significant quality when approaching the nerve, or when working frail walls. The excavator ought not to be discarded. It once was young, but is now old; yet it has never fussed, or grumbled, or wobbled, or refused to work when treated respectfully.

The Dental Digest.

TREATMENT OF CHILDREN.

By Dr. G. A. MAXFIELD.

I used to think that the parents were wholly to blame for the behaviour of their children in the dental chair, but since I have had a little boy of my own I have entirely changed my belief. I seldom extract a deciduous tooth before the time it should be lost. In all operations as little pain as pos-

sible should be inflicted, for the dread which many people have of the dentist's chair is the result of vivid impressions received in childhood. I have had excellent results in the use of nitrate of silver. When a child presents, suffering from an exposed pulp, an application of the nitrate of silver, or a pellet of cotton moistened with creosote and then dipped into powdered cocaine and applied in the cavity, will generally quiet the pain at once. In most cases the pulp dies in a few days, as the children are not brought to us until after they have suffered some time. After the death of the pulp I remove all I can, moisten a pellet of cotton with eucalyptol and iodoform and place it in pulp chamber, then fill the cavity with cement, gutta-percha or amalgam. Then with a small drill I bore through to the pulp chamber on the buccal side of the tooth just under the free margin of the gum, which will allow all gases to escape and prevent the formation of an abscess.

Dental Digest.

PORCELAIN INLAYS.

By Dr. C. V. KRATZER.

I have been doing some work in porcelain inlays in the last two years. I find that the method Dr. Guilford mentioned, that of using the rubber end of the pencil, sharpening it down to a point, is a good one, but I use the writing end without being sharpened. It is of great aid in pressing the platinum foil to the edges of the cavity, but I do not confine myself to these two. I use a steel burnisher also. I think I can get a sharper edge by finishing up with this. The foil can be readily burnished down, and will admit of considerable burnishing before it becomes hard enough to leave the edges of the cavity, by its springiness.

This work, I think, is especially useful in incisors and cuspids, where a large gold filling would be unsightly, and for that reason objectionable. I have used it in such, and while at first I was sceptical as to the durability of the cement, I found later that my scepticism was entirely unfounded. Of those put in in that way two years ago, I have

seen but a few recently, and there is no perceptible wearing away of the cement. The work is very beautiful when you approach the shade of the natural tooth closely and get a good adaptation ; from some little distance it can hardly be noticed at all.

In repairing porcelain teeth, changing the shape, form, and colour of the teeth, etc., I find it very useful in my practice. The first use I made of it was in the alteration of a Logan crown. I could find none in my stock to fit. The crowns I had were all too small to cover the root. I remedied the difficulty by enlarging the one which came nearest to fitting so as to proximate the contour of the root, thus making a perfect fit by slight subsequent grinding.

I have also repaired broken gum-section blocks by slightly bevelling the broken edges and filling the grooves with body; by very careful manipulation the pieces can be thoroughly reunited so that when replaced on the set the joints will be scarcely perceptible, if at all. I have also reattached pins to old blocks by this means.

Items of Interest.

THE BRITISH LOVE OF QUACKERY.

Professor Struthers, President of the Royal College of Surgeons of Edinburgh, in distributing the prizes to the successful students of the Incorporated Dental Hospital and School of Edinburgh, remarked upon the changes that had occurred in the dental profession during the last half century. The greatest change had been brought about by the Dental Act of 1878, before the passing of which nobody knew whether a man was a dentist or a quack. The Act enabled the public to distinguish between the qualified and the unqualified, and gave the profession a status. The British public, however, loved to be quacked, and would never agree to prevent anybody practising medicine or dentistry, though they had a right to know who were qualified and who were not. The Act provided that anyone using a dental title to lead the public to believe he belonged to a qualified class when he did not, behaved illegally, but it could not prevent men practising dentistry and advertising certain statements such as "a complete set for one guinea."

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of the members of the above Society was held at the Grand Hotel, Aytoun Street, on Tuesday evening, March 31st, 1896, Mr. W. Simms, President, in the chair.

CASUAL COMMUNICATIONS.

Mr. G. O. WHITTAKER showed a plaster model of a mouth with an odontome in the region of the first right upper molar and a model of the same mouth after the removal of the odontome. Mr. Geo. Campion had been kind enough to make some photographs of the odontome for exhibition that evening.

Mr. JONES, a student of the Dental Hospital, stated that the odontome was found by him in a friend's mouth. He brought the patient to the Manchester Royal Infirmary, and under the care and direction of Professor Jones, he removed the odontome. One peculiarity he noticed was that the odontome was attached by a strong ligament to one of the bones of the jaw, and it was necessary to use a knife to sever it.

Professor LUND said he presumed that the odontome would not be regarded as a temporary tooth but as a growth on the tooth *per se*. In his opinion, however, the main interest attaching to the odontome was whether there had not been two teeth growing together at the very earliest stage of development and the germs in some way or other had become fused together—one only being erupted. He thought that some other traces of the other germ might be found when the sections of the odontome were made. In making those sections he hoped care would be taken to see if there was any trace of two centres of growth or not.

Mr. P. PYKES, M.R.C.V.S., showed an example of true sarcoma taken from the jaw of a cow three years old. It was not in any way due to caries as herbivorous animals were not subject to that disease.

SOME NOTES ON SUPERIOR PROTRUSION.

By Geo. G. CAMPION, L.D.S. Eng.

Mr. Campion said that in a paper read before the Odontological Society of Great Britain, a few months ago, he had discussed at some length two points worthy of notice in cases of superior protrusion. One was that in a large percentage of cases there was an abnormal occlusion of the upper and lower molars and bicuspid, the lowers often biting the breadth of a bicuspid posterior to their normal antagonism, so that they had to deal not merely with an irregularity of the incisors, but with an abnormal relation of the entire arches. The second point was that in cases of protrusion the arches were abnormally narrow and that this narrowness was not merely relative to their length, but absolute when compared with a series of normal arches. Mr. Campion then showed a number of lantern slides illustrating these points, and described two cases in which he had attempted with partial success, to jump the bite by means of inclined planes fixed to gold caps fitting over one of the upper bicuspid on each side of the mouth. The caps were fixed to a plate which also carried gold springs to retract the incisors. He had only been able to find particulars of three published cases of protrusion in which the bite had been successfully jumped, but cases of protrusion often differed very considerably from one another and might be divided into three or four different classes. He believed that further study of these cases would result in their being treated with more discrimination than was usual at present, and that they might look forward to being able to recognize almost at a glance the characteristics of the cases which could be treated more readily and satisfactorily by jumping the bite than by retracting the upper teeth.

DISCUSSION.

Mr. WHITTAKER said they would all feel deeply indebted to Mr. Campion for his interesting address. In regard to "jumping" the bite he had no doubt it was correct in theory, because they knew when patients had an unsound tooth, how they managed to alter the movements of their jaw so as not to bite upon that tooth. Mr. Campion had also showed the models of cases where the upper canines were coming down

and pushing the laterals in. On that model he (Mr. Whittaker) noticed the canines did not touch the laterals, and as the lower canines were frequently erupted before the upper ones it seemed to him that it was the lower canines which were driving the upper laterals in. In regard to children sucking the lower lip he had seen that habit cause the upper centrals to protrude greatly in a very short time. Mr. Campion also mentioned the cases of upper centrals and laterals being impinged upon by the lower incisors, and which he did not know whether to ascribe to a growth of bone raising the central incisors and laterals or imperfect development of the back teeth. Judging from the case which he (Mr. Whittaker) had brought that evening, it seemed to be a growth of bone in the lower jaw which raised the whole "bite" bodily upwards.

Mr. W. A. HOOTON said he had the models of a case to bring under their notice which illustrated the good effects which they might get even from extraction alone. The patient was a girl about thirteen years old. The superior protrusion was very marked. The first thing that was done was to remove the six year old molars. The second model would show the marked improvement which at once took place in the shape of the mouth. The closure of the space, of course, was partly due to the coming forward of the second molars. But if one measured between the tips of the upper and lower teeth they would see that there had been a distinct shortening of the arch of the upper jaw. The case was a simple one in this respect that the lower front teeth did not bite on the upper gum. He should like suggestions as to the further treatment of the case. Personally, if the patient had been a boy, he should have felt inclined to have taken out the upper laterals and pulled back the centrals, a course of procedure which would have obviated the need of the patient having to wear plates for such a long time. The other case he had brought was more difficult in every way because of the impingement of the lower front teeth on the upper gum, illustrating, very forcibly, Mr. Campion's point about the upper arch being contracted. The only thing to do in such a case was to take out the first bicuspid after first raising the bite, (a plate for which purpose was now being worn) and pull the front teeth back. He thought that perfect success in such cases was hopeless.

Mr. COLLETT said he thought Mr. Campion hardly allowed the habit of thumb-sucking in young children the importance that was due to it as a cause of the protrusion of teeth. As the mouth was necessarily kept open when the child was sucking its thumb the molar teeth had room to elongate. Another feasible explanation of the defect was that it was very common in children whose tonsils were too large, and who, in order to get rid of the discomfort, slept with their mouths open, thus permitting the teeth to come down out of their sockets.

Professor LUND said that to him the whole matter seemed to turn upon the question of development. In cases where they found the two arches of the mouth were not developed equally they could easily understand how the mechanical operation of the development of the teeth must go wrong. He too was inclined to think that thumb-sucking had something to do with the unfavourable development of the teeth. It seemed to him also that where the mouth was kept constantly open the pterygoid muscles would become tired, and fail to perform their functions and allow the jaw to slide back instead of pushing it forward.

Mr. P. HEADRIDGE said he was rather surprised to hear Mr. Campion advocating the use of the retaining plate which he (Mr. Headridge) thought had done more harm than good. Crowns would do the same work as plates without any injury to the other teeth. There was always a liability, no matter how careful the patient was in cleansing the mouth, of the adjoining teeth being injured by the secretions under the plate. Mr. Campion would have got the same results if he had crowned the six year old molars rather than the bicuspid, as these latter teeth being developed much later than the molars afforded less support.

Mr. G. CAMPION, in reply, admitted that "capping" the bicuspid, tended to drive them down, and quite agreed with Mr. Headridge as to the advantages of "capping" the six year old molars. He had tried that in one of the cases, but found so much more difficulty in adjusting the inclined planes that he placed the caps on the second bicuspid instead. He could not, however, agree with him in his entire denunciation of the wearing of plates. There were cases undoubtedly in which they did harm, but it depended on the quality of the teeth and the way they were kept clean. He was still of

opinion that thumb-sucking as a cause of the deformity had been overrated. He was quite in accord with Mr. Lund that the deformity was due to non-development and that mechanical causes were responsible for only a small per-centage of cases. There were probably several causes at work, and it was very difficult to find out the exact nature of them. He should be indebted to Mr. P. Headridge if he could bring before them any cases in which he had used inclined planes on the molars and what results he had obtained. Could he give them any cases where the bite had definitely been "jumped"? If any one had such facts in his possession they ought to be made public, as they were of infinite importance in the treatment of these cases. One often heard of cases in which teeth had been retracted by the use of appliances, but twelve months afterwards had returned to their old positions. He made it a rule to make the patient wear the appliances for two years, at night at least, after the teeth had been corrected.

The President having thanked Mr. Campion for his paper, the meeting terminated.

LIVERPOOL DENTAL HOSPITAL, STUDENTS' SOCIETY.

On March 16th, a meeting of the above Society was held in the Board Room of the Hospital, when there was a large attendance, Mr. Rose, the President, occupying the chair.

The minutes of the previous meeting were read and confirmed.

Casual Communications were made by

Mr. DRAKE, who showed a model, showing suppression of laterals; also a fractured tooth, which he had treated for two months with a splint. This case was commented on by Messrs. Mansell, Capon, Edwards and Philips.

Mr. WOODS showed the lower jaw of a monkey, demonstrating the temporary and permanent dentition; also a pair of straight forceps with aseptic joint.

Mr. Woods also brought forward some old bone plates, which Mr. Durandu had kindly presented to the Students' Society. A vote of thanks was passed to M. Durandu.

Mr. MAPPLEBECK passed round a lower molar, to which was firmly attached a considerable portion of the inner portion of the alveolus.

Mr. CAPON mentioned a case of some teeth being denuded of enamel, due to some medicinal agent, used for thrush.

Mr. C. F. ANDERSON brought forward an exposure due to attrition.

Mr. PARSON detailed an unsuccessful attempt at producing anæsthesia with Nitrous Oxide. Mr. Rose described a similar experience.

Mr. NIXON passed round a model of the upper jaw showing a large abscess cavity.

Mr. Bates was then called upon for his paper, which is published on page 870.

The discussion was opened by Mr. ROBERTS, who remarked on the difficulty of keeping the mouth dry, whilst inserting the filling, and spoke of the use of props to keep the mouth open and save the child tiring.

Mr. KEATINGE asked Mr. Bates if he definitely condemned As_2O_3 as a devitalizing agent.

Mr. DRAKE asked if it was advisable to extract temporary canines if badly decayed.

Mr. LLOYD did not believe in the too ardent retention of temporary teeth, if badly decayed, but considered it necessary to retain the second molars and canines *in situ*, to prevent the travelling forward of the six-year-old molars, and the crowding of the permanent incisors. His treatment of abscessed teeth consisted in excavating and shaping the cavity so that there would be no retention of food matter, and leaving them open.

Mr. Woods considered it advisable to remove exfoliating stumps, and teeth that were causing swelling of the glands, or were in an abscessed condition, as he thought they might account for the honeycombed teeth of the permanent set.

Mr. GILMOUR asked Mr. Bates how he treated the pad of gum so often found between the temporary teeth, and which was often a source of great pain or annoyance.

Mr. PHILLIPS remarked his treatment of exfoliating stumps was to excise the exfoliated part and grind smooth with a smooth stone. The gum Mr. Gilmour spoke of, he treated

with caustics, and in filling was careful that approximate cavities should be treated as two fillings, and not, as was very common, treated as one, and laid stress of the fact that teeth though firmly implanted were constantly moving and rubbing each other.

Mr. BATES then replied, and the meeting terminated.

INFLUENCE OF CONDIMENTS ON DIGESTION.

The action of condiments when taken with food is not definitely understood, though it is generally understood to be beneficial, as promoting digestion. An observer named Gottlieb has recently confirmed this view to some extent, as the result of experiments on rabbits. A cannula being introduced into the pancreatic duct, pepper or mustard was allowed to pass into the stomach, and the secretion of pancreatic juice was found to increase to three or four times the normal quantity. It appeared more watery than usual, but possessed the same digestive powers as ordinarily.

Phar. Journal.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
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ORAL SURGERY.

By EDMUND W. ROUGHTON, B.S., M.D. (Lond.), F.R.C.S.
Eng.

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(Continued from page 728.)

DISEASES OF THE GUMS.

The mucous membrane of the gums is liable to the same inflammatory affections as that lining the rest of the buccal cavity. These have already been dealt with (see Stomatitis). Tumours of the gum have been described in the section devoted to Tumours of the Jaws. There are, however, some other diseases which require mention here.

HYPERTROPHY OF THE GUMS.

Hypertrophy of the gum may result from the irritation caused by badly fitting dentures or accumulations of tartar. In such cases the hypertrophy is not great, and it is very seldom that it is necessary to do anything more than remove the cause of irritation. But in children a peculiar variety of hypertrophy of the gums is sometimes met with. It commences at the time that the temporary teeth are being cut, viz., between the ages of six months and two years. The gum increases in size so that eventually the teeth become almost completely hidden from view by large papillomatous

or polypoid-looking projections of the same colour as the normal gum; although in places they are soft, vascular, and spongy-looking, they are mostly firm and fibrous to the touch. The disease usually affects the whole of the alveolar arch in both jaws, but may sometimes be limited to the incisor region. In some cases the overgrowth is sufficiently large to project from the mouth and to bulge out the cheeks. Mastication is considerably hampered.

Microscopic examination proves the growth to be a pure hypertrophy of the gum, chiefly the fibrous portion. In structure it consists of a dense stroma of interlacing fibres, containing much glandular tissue in its interstices and covered on its surface by large and vascular papillæ. The growth appears to start from the periosteum around the necks of the teeth.

The subjects of this disease are often deficient mentally. Sometimes it occurs in several members of the same family.

Treatment. It will not suffice simply to pare away the hypertrophied tissue, as recurrence is pretty sure to follow. This is owing to the disease affecting the sockets of the teeth as well as the gum. To effect a permanent cure it is necessary to remove the alveolar margin as well. The germs of the permanent teeth in the vicinity of the disease must be avoided as far as possible.

Polypus of the gum is the name given to a localized hypertrophy of a portion of gum usually between two teeth. It is produced by the irritation of a rough or carious tooth, tartar, or some portion of an artificial denture. In microscopic structure it resembles gum tissue. Sometimes the growth encroaches upon the cavity of a carious tooth so as to simulate polypus of the pulp, but it may be distinguished from the latter by its greater sensitiveness and by its pedicle or base of attachment being between the teeth and not within the carious tooth.

The *treatment* consists in removing the source of irritation and snipping off the growth with scissors. Its base should be touched with nitrate of silver or with the electric cautery. Recurrence does not take place after effectual removal.

DISEASES OF THE FLOOR OF THE MOUTH.

RANULA.

A ranula is a cyst under the tongue usually on one side of the frænum. Different views have been held as to the nature of the cyst and its mode of formation. It was formerly thought that it was always the result of dilatation of Wharton's duct. Although some ranulæ may be due to this cause, the majority of them are of a different origin; the shape of the swelling is not that of a dilated duct of Wharton, nor is the submaxillary gland itself swollen as it is in cases of obstruction of the duct by a salivary calculus; moreover it is sometimes possible to pass a fine probe along the duct for an inch or more by the side of the cyst.

Ranula has also been attributed to dilatation of one of the ducts of the sublingual gland, but the shape of the swelling and the condition of the gland itself negative this view.

It is now held that the disease is usually due to dilatation of the duct of the Blandin-Nuhn gland, a small mucous gland situated on the under surface of the tongue a little to one side of the middle line. Von Recklinghausen had the opportunity of dissecting a subject in whom there was a ranula, and discovered the remains of the Blandin-Nuhn gland projecting into the cavity of the cyst; he also found that the epithelium lining the ranula was similar to that of the gland.

The disease is nearly always very chronic; it causes no pain and may pass for a long time unnoticed. The only subjective symptoms which it produces are a slight discomfort in mastication and a sense of fulness under the tongue.

When the mouth is opened and the tongue turned back, a ranula is plainly visible as a smooth bulging swelling of a deep bluish colour, tinged with pink, and more or less translucent; large tortuous vessels are often seen coursing upon its surface. It is usually very soft to the touch, but may feel tense; fluctuation can be easily detected.

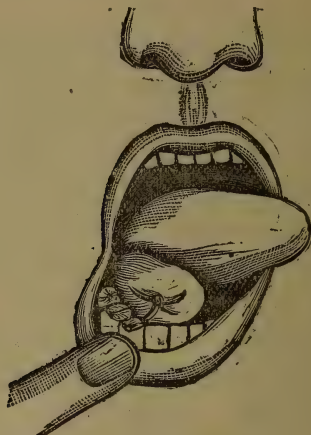


Fig. 55. Ranula.

The *treatment* usually adopted is to cut out a portion of the cyst wall with scissors; the fluid thus evacuated is clear and viscid. A simple incision without removal of a portion of the cyst wall is usually followed by a re-accumulation of the fluid.

Some surgeons prefer to introduce a seton and leave it in position for a week. If the above methods fail, a triangular flap of the cyst wall should be cut and stretched back into the cavity of the cyst; this effectually prevents the cyst from closing before its cavity is filled up. Lastly, the cyst may be completely removed, but the proceeding is a difficult one.

DERMOID CYSTS.

Dermoid cysts in the floor of the mouth are due to the folding in of a portion of the integument during the coalition

of the two lateral halves during development, or to imperfect obliteration of the lingual duct. In this manner a cavity lined by skin is formed. The epithelial lining of the cyst wall is usually tough and fibrous; it produces a thick material resembling sebaceous matter and composed of cast off epithelial cells, oil, cholesterine, fatty debris and sometimes hairs. The cyst is situated either in the middle line between the two genio-hyo-glossi muscles, or a little to one side between the genio-hyo-glossus and the mylo-hyoid. It is usually single but sometimes one is found on each side of the middle line.

Although of congenital origin it is very seldom that dermoid cysts in the floor of the mouth are noticed before the age of fifteen or twenty. The subjective symptoms which they produce are of but slight importance, although more pronounced than those produced by ranula, owing to the more solid nature of the cyst contents; discomfort in eating and speaking, and a sense of fulness are usually the only symptoms complained of.

The tumour projects both into the floor of the mouth and in the neck between the chin and the hyoid bone, forming a lump as large as a hen's egg or larger. The surface of the tumour is smooth, and its outline rounded or elongated; the mucous membrane covering it is of a yellowish tint, and not translucent as in ranula; pressure produces distinct pitting in some cases. Fluctuation can usually be obtained both inside the mouth and in the neck; but the feeling is much more doughy than in a case of ranula.

The diagnosis is usually easily made. In case of doubt it may be cleared up by an exploratory puncture.

Treatment. The cyst may be incised through the mouth, and the cavity packed with gauze after evacuation of the contents. It is, however, more satisfactory to remove the sac completely; if the tumour be small this can be easily done

from within the mouth. If the tumour be a large one, it must be removed through an incision below the jaw, either in the middle line of the neck or over the most prominent part of the tumour; the dissection is not usually difficult or dangerous.

SALIVARY CALCULUS.

A salivary calculus not very uncommonly forms in the duct of the submaxillary gland. In size and shape it somewhat resembles a fragment of slate pencil. It consists of phosphate and carbonate of lime and phosphate of magnesia. It forms very slowly and may remain for years without causing any symptoms; but eventually inflammation is set up, the surrounding tissues become swollen and painful, and the duct more or less completely obstructed. As the result of this obstruction and of inflammation spreading backwards along the duct, the sub-maxillary gland becomes enlarged.

When the interior of the mouth is examined the tongue is found somewhat swollen; the parts between the tongue and the floor of the mouth on the affected side are red, swollen and tender. On palpating beneath the jaw the submaxillary gland is found to be enlarged and hard, but not as a rule tender to the touch. The presence of the symptoms just enumerated should always lead to an examination of the submaxillary duct. On introducing a fine probe a rough and gritty mass will be felt, usually near the orifice, but sometimes further back.

Treatment. The calculus must be removed through an incision made directly over it. Great care should be taken not to break it, as any fragments left behind are difficult to remove and are apt to cause even greater irritation than the original concretion.

(To be continued.)

HOW FAR IS ASEPSIS POSSIBLE IN DENTAL SURGERY?

By PROF. T. JONES, M.B., F.R.C.S.

Mr. President and Gentlemen,—The acceptance of the invitation given me by your Secretaries necessitated the choice of a subject on which to base my remarks to-night. At first I was inclined to speak of the relations which should subsist between the dental and general surgeon, and of the points at which their several spheres touch. This I abandoned in favour of a subject which I believe to be of decidedly practical utility, and which is I apprehend, becoming of greater importance to everyone practising dental surgery.

Ever since Lister called attention to the role played by micro-organisms in the changes liable to take place in wounds, the attention of Surgeons has been directed to the means to be observed in preventing fermentation changes in wound secretions, and in adapting such to the successful treatment of operation and other wounds. The antiseptic method has passed through various phases, and of late years asepsis has been adopted as the simplest and most successful method of dealing with wounds. And here it is necessary, in order to obtain a clear understanding of the surgical practice of to-day, that I should, very briefly, explain what the essential difference is between antiseptis and asepsis. In antiseptis various agents, antiseptics, are employed, to prevent putrefaction and allied changes, by destroying the micro-organisms which are known to produce such changes. The wound is kept in an antiseptic state by irrigation or spray, so that any germ gaining access to the wound may be killed or rendered innocuous. Of the antiseptics in use, the most

* Read before the Students' Society, Victoria Dental Hospital.

reliable are carbolic acid and corrosive sublimate, the latter agent being preferred, as it irritates the tissues far less than the former.

In asepsis the object aimed at is, that everything which comes into contact with the wound shall be absolutely free from germs which are pathogenic for man, or which are putrefactive. The micro-organisms are excluded from the wounds by rigid disinfection and sterilization. When the practice is pushed to its very extreme limits, no antiseptic is employed during an operation, even the sterilized sponges used to mop out the wound being dry. English surgeons as a rule employ a mixed method, instruments, sponges, materials, etc., are carefully sterilized, but in addition the antiseptics already mentioned are employed during an operation, and the wound is flushed with an antiseptic lotion before being finally closed.

Now the enquiry in which I have been engaged has been this, How far is asepsis practicable in dental surgery, and if not practicable, is it possible to adopt a mixed method similar to that which is employed in this country in general surgery. With the view to ascertain what is the usual custom that prevails among dental surgeons in regard to the use of antiseptics, I had circulars sent to the various dental institutions in this country, a circular containing certain questions, answers to which were invited. In the *Medical Directory* fourteen Dental Hospitals are mentioned, and although a circular was forwarded to each, only seven vouchsafed a reply. One gentleman wrote that although dean to a large and active dental school, he did not practise dental surgery, and therefore he could furnish no information. I suppose it never occurred to this gentleman that any one of his dental colleagues could have supplied the desired answers. The answers from the other six institutions I will now proceed to analyse. In one no antiseptics are used in the case of instru-

ments, and no method of ensuring asepsis employed, still we are told that the results of the practice at this institution are found to be satisfactory. It is advised that instruments should be cleansed with hot water immediately after use and polished. In a second we are told no special apparatus has been used in our hospital for disinfecting purposes; but the Medical Committee have accepted a report of a sub-committee, appointed for the purpose, who have recommended a "boiler" for the instruments in the extracting room, that is, the instruments are to rest in boiling water for an appreciable interval before being re-used. Nothing has been done systematically in the stopping room, but it is hoped that a sand bath will be introduced.

From a third institution, a provincial one, we obtain a much more encouraging report. All instruments are sterilised after use in carbolic acid 1 in 20, and in cases of extraction the forceps and elevators are plunged in the same strength of carbolic acid before using; utensils are washed in Condy's fluid. Cotton wool used as received from the chemist, before such wool is passed up a root canal, previous to filling, it is saturated with an antiseptic, Sol. Hydrarg. Perchlor. 1 in 500, drying the canal with hot air afterwards. The methods have been found satisfactory in practice.

It will weary you if I persevere with my analysis. The impression left upon my mind after a careful perusal of these several reports, has been that no systematic measures have been adopted for the disinfection of instruments, materials, etc. It is also intimated from more than one hospital that it is contemplated to adopt some method to ensure disinfection. The necessity, therefore, for the adoption of some precautions has become manifest to those practising dentistry. The answers obtained from your own hospital clearly demonstrate that you are fully alive to the need of precautionary measures. Here it appears that forceps are not specially steri-

lized immediately before being used, but afterwards they are allowed to rest in an earthenware vessel with their blades in 1 in 20 carbolic acid, and when operations are finished they are wiped and put back in the case. Only when forceps are used a second time in one morning or evening are they used direct from the carbolic. Cotton wool is never sterilized, nor is the silk; utensils are cleansed with 1 in 40 carbolic acid or with permanganate of potash.

As you might imagine from its position the mouth is the happy hunting ground for very many varieties of bacteria, leptothrix and spirillar forms being the most common and some of them no doubt are pathogenic. Is it not of the utmost importance to prevent these from gaining a foothold in the inflamed and ill-resisting tissues round a diseased tooth? Are not the severe and far spreading inflammations not infrequently seen after tooth extraction septic in character, and should not the mouth, more especially the area of operation, that is the vicinity of the tooth or teeth to be extracted, be subjected to a thorough and systematic cleansing? Some one will say the parts around a decayed tooth are already septic, and that therefore antiseptic measures are perfectly useless. I frankly admit that it is very difficult to render a part aseptic once it has become septic. Still the fact that it is so already, constitutes no valid argument against the adoption of all essential precautions. At least it is not thus regarded in general surgery, and I fail to see any good reason why an exception should be made in the case of dental surgery.

I think I have already said enough to convince any unbiased person that very little attempt is made in dental surgery to carry out in a systematic way the principles of antiseptic surgery. It is a subject which should engage the attention of dentists, and I shall be very pleased if anything I say to-night has the effect of awakening interest in a matter which

cannot fail to yield satisfactory results. And now let me proceed to indicate the preventive measures which I deem to be necessary and the means by which they can best be carried into effect.

It is a well-known fact that heat is the most powerful disinfecting agent we possess, and that for the efficient disinfection of instruments boiling them even for a short period is quite sufficient.

I would suggest, therefore, that all instruments employed in dental operations be boiled in water to which a little common soda has been added to prevent rusting, a 1 per cent. of soda (carbonate of sodium) being sufficient to guard against any rusting of steel instruments. It is not necessary to provide any special apparatus for the purpose, a japanned saucepan, with a closely-fitting cover answers all requirement. The instruments are laid in the pan and water already warmed is poured in until the instruments are covered by it, the soda is added and the vessel is placed on the fire. In a few minutes the instruments have been sufficiently boiled, the vessel with the instruments is then cooled down by placing it in a basin of cold water. The instruments can now be taken out of the vessel during the operation with every confidence that they are perfectly germless. What can be simpler and more convenient than the method just described, the materials are always at hand, and the most efficient sterilization devisable for our instruments is accomplished in a very short space of time.

It appears to me that a dentist whose work is mainly at his rooms, can secure sterilization much more readily than a surgeon much of whose work has to be done in private houses.

Again, are there no aseptic materials, such as Medicated Cotton Wool, and sterilized silk which can be used for various dental purposes? In works on dental surgery full instructions

are given as to the manner carious cavities should be cleaned and yet no mention is made of any means for asepticising instruments. In the absence of medicated or sterilized cotton wool, could not sterilized *mull* be used to dry carious cavities previous to their being filled? A further question suggests itself: ought not such materials as cotton wool, cloths, &c. be kept in their cases, which would to a certain extent preserve them from dust contamination? I would also suggest the employment of small sterilized artificial sponges in many procedures when cotton wool is now employed. These are readily made by enclosing cotton wool in butter cloth and allowing them to remain in an antiseptic solution for a fortnight before being used. I can imagine such sponges being of real utility in cleansing the mouth prior to tooth drawing where there is suppuration present. It seems to me imperative upon the operator to clean the area of operation before a tooth is extracted where the parts are in the condition before mentioned. It is incumbent upon him also, under such circumstances to instantly boil the instruments which have been employed, and to see that they are not used again prior to careful examination. If it is deemed unnecessary or impossible to sterilize instruments after each operation, they should be immersed for several seconds either in a boiling soda solution or in a solution of carbolic acid 1 in 20.

There is still another point to which I wish to allude. I should like a glass table on an iron frame to become a common article of furniture in a dental surgeon's operating room. Too frequently I am afraid an instrument is put down anywhere and this makes its contamination a very easy matter.

In conclusion let me tell you how not to do it. Neglect, indeed disparage, all means for sterilizing instruments. Take up any dirty contaminated cotton wool to mop out a carious cavity in a tooth. Neglect the means for disinfection of hands, and take no particular heed of the cloths employed

to clean out the mouth. Employ any piece of silk, one which has been lying about and taking up as much dirt as possible, and wrap it round a pin used in pivoting, push it well into the hole made in a stump. Express surprise if this procedure is attended by a sharp attack of septic inflammation leading to an abscess at the root of the tooth, and put the mischief down to a cold or anything else but the right cause.

ARTIFICIAL TRUE GEMS.

In his recent interesting lecture on precious stones, before the Society of Arts, Professor Miers gave a few further particulars of M. Moissan's recently devised process for the artificial production of the true diamond. This process consists in dissolving carbon in molten iron by the intense heat of the electric furnace, when, by subsequent cooling under pressure, the carbon is induced to separate out in the crystallized form. These diamonds, Professor Miers tells us, are, besides being mere minute specks, by no means clear and limpid, and are, moreover, costly to produce, so that there is at present no fear of their entering into competition with the diamonds of Kimberley. With the artificial production of the true ruby, however, the case is far different; this stone has now been successfully reproduced in Paris on a sufficiently large scale to be used in jewellery. Several methods have been devised for the artificial production of this stone. One of the best of these consists in raising to a very high temperature a mixture of alumina, potassium carbonate, and calcium fluoride. The red colour is obtained by adding a trace of potassium chromate. By maintaining the temperature for about a week, crystals weighing one-third of a carat have been obtained without much difficulty.

British Journal of Dental Science.

LONDON, OCT. 15, 1896.

FIGHTING THE DENTISTS.

The *Chemist and Druggist* has started a fund for the object of testing how far the provisions of the Dentists' Act can interfere with the unregistered practitioner who performs dental operations and says that he does so. According to our contemporary, the number of chemists directly concerned in the proper interpretation of the penal sections of the Act must be numbered by hundreds if not thousands. On behalf of these, the *Chemist and Druggist*, if sufficiently supported, is prepared to take a test case to the Courts. It says the association of dentistry with pharmacy is a natural and proper one, and has continued for many years. It therefore takes exception to the action of the British Dental Association, which it says is trying by what it considers an unfair use of the Dentists' Act to "bounce" chemists out of this right and practice. Its contention is that any competent Court would interpret the term "specially qualified" to mean qualified by some specific authority. A man may be highly qualified (by experience) yet not be specially qualified (by law). To prevent this person qualified by experience from practising, because he is not qualified by law (registered) seems to the *Chemist and Druggist* unfair. Hence the call to arms. The obvious inference is that the convictions obtained against unregistered practitioners at Cardiff and elsewhere, were obtained before tribunals which were incompetent, and the *Chemist and Druggist* is of opinion that a competent Court would reverse the decisions of these incompetent ones. It does not wish that unregistered persons should assume the title of dentist or anything which implies qualification, but it maintains that it is perfectly

legal for an unregistered person to perform dental operations and to say that he does so, and it thinks it monstrous to fine a man for describing himself as an artificial teeth manufacturer, or using any similar appellation.

Our contemporary once started a similar crusade against the Veterinary Act and won its case. Perhaps this accounts for its eagerness to again try the fortunes of litigation. But the cases are not on all fours. In the former case it won the right for a chemist who sold veterinary medicines and compounded them, to call himself a veterinary chemist. But no professional veterinary operations were performed, and the public ran no risk of being deceived. In the present case professional operations requiring great skill—for which the legally qualified man has to undergo an arduous curriculum—would be performed, and the public would be deceived. If the *Chemist and Druggist* relies upon this case—and it seems to do so—it will find that it is grievously mistaken. Its tone all through is naturally a simply commercial one. It talks of tooth extraction as a “profitable extra,” and its correspondents who boast of having extracted their ten thousand or twenty thousand teeth respectively, look upon it in the same light. If these men are allowed to enlarge their destructive capacity the wholesale extraction of teeth, which we are doing our best to avert, will be multiplied indefinitely. No one can interfere with a chemist or anyone else who extracts teeth, but if he holds himself out or leads the public to suppose that he is qualified by law to perform dental operations, he brings himself within the scope of the Dentists’ Act. In addition to chemists unregistered as dentists, the door would be thrown open to hundreds of others, who, having picked up some smattering of dentistry in workshops and elsewhere, would exhibit artificial teeth outside their doors with a notice that they are artificial-teeth manufacturers, and that teeth are extracted, stopped, &c. The impression conveyed to ninety-nine out of every hundred, would be that they are specially qualified to practice dentistry, and the person would be known to them as a dentist. The injustice of this towards the qualified man who

is obliged by law to spend many years and much money in obtaining his diploma for the benefit of the public, would be intolerable, and outrageous for both parties.

The chemists have had their own battle to fight. They have their examinations to pass, and their diploma to gain. No one can open a chemist's shop and call himself a chemist without having been qualified and registered, and any transgressor in this respect would be speedily brought to book by their Association. This agitation from them comes then with a specially bad grace, and we cannot think that it proceeds from the better class of this respected community. They ought rather to hold out to us their fullest sympathy in our fight against an unqualified competition, the evils of which they themselves have suffered and are still suffering from. Their training has nothing to do with our specialty, and they have no qualification for our duties. At any rate, their action is morally, as well as legally wrong, which they will find if they fight this question. It is in the highest interests of humanity that the duties of each profession be discharged only by men skilled in that profession. We are entrenched behind Article 3 of the Dentists' Act, which has become stronger by every case—and they are now many—which we have won. The scope of the Act has lately been interpreted to not only include the "person" mentioned in the Act, but also an Association or Company. If the test case is ever entered upon, we may anticipate the result with calmness and with confidence.

"TRUTH" AND THE DENTIST.—Mr. Labouchere, though sometimes misguided in his comments upon dentists and their affairs, has done a public service in exposing the methods of a "Dr." Foley, in *Truth*, of September 17th. It seems that a poor woman, a cook, who had collected about a hundred pounds, the result of years of careful saving, consulted the learned "doctor." Whether she was influenced by a pamphlet he issues named "Behind the

Scenes," in which, after decrying other dentists, he modestly styles himself "At the very head of dental notabilities," we do not know. At any rate for making her temporary and permanent vulcanite sets thinly cased in gold, he demanded £126. Fortunately the poor woman told her troubles to her employer, who managed to make "Dr." Foley deduct £56 from this amount under threats of legal proceedings. If *Truth* is correct it is such men as this who bring discredit upon the profession, and make the name of some dentists synonymous with chicanery and rapacity.

MR. MORTON SMALE AND PATENT MEDICINES.--In his excellent Inaugural Address to the Students at St. Mary's Hospital, Mr. Smale took for his principal theme, the subject of Patent Medicines. He calculates that the amount of money spent on stamped medicines bought and used by the public, amounts to something like £2,500,000 per annum. He attributes this to the ignorance of the public, to their belief in mendacious advertisements and to their false economy. The remedies he suggests are, that the Government stamp should be abolished, that drugs should only be supplied by qualified chemists, and then only with a doctor's prescription. Even in our own limited specialty we often see the harm done by home doctoring. We find patients consulting us only after having tried one nostrum after another for toothache, neuralgia, or indigestion. How often have we to say to our patients "Why did you not consult me sooner?" If it is so with us, how much more must it be with general practitioners. We consider that Mr. Smale has ventilated a subject of great public importance, though whether the Chancellor of the Exchequer will feel disposed to relinquish the revenue obtained from the Patent Medicine stamps remains to be seen.

SUBTLETIES OF THE STAMP DUTY.—In the *British and Colonial Druggist*, a correspondent writes that he sent a label to Somerset House with the enquiry as to whether the

preparation was dutiable or not. The label ran thus "Blank's Nursery Hair Lotion, a new discovery for cleansing children's heads." The grave Government official replied to the effect that if the word "hair" were substituted for "heads" no liability to duty would be involved.

"Strange that there should such difference be
"Twixt Tweedledum and Tweedledee."

A DISHONEST APPRENTICE—Mr. Walter Perry, a dentist, of Clifton, having noticed a deficiency in his stock of teeth, instituted enquiries, and found that his apprentice, a lad of sixteen, had been robbing him extensively of the platinum contained in the teeth, and also of dental alloy, gold, and gold solder. It seems that the youth had no difficulty in disposing of his plunder to a jeweller who is now remanded for trial at the Quarter Sessions on a charge of receiving goods knowing them to have been stolen. To say the least of it, it shows great want of common care and prudence for a tradesman to buy precious metals from a lad of sixteen without making full enquiries as to how he became possessed of them.

A CASE THAT FAILED.—It is said that we learn far more from our failures than our successes. If so, the local Dental Association—which instituted an action against an unregistered man at Paisley, who advertised himself as a dentist—ought to learn a good deal, for the case proved a miserable failure. The reason of this failure is almost too absurd for belief. It was caused by the prosecution having failed to produce the Register showing that the name of the defendant did not appear therein. The Sheriff was quite satisfied from the evidence that the defendant had contravened the Statute in regard to the charge, if he was not a registered dentist, but as there was no proof that he was not, he dismissed the case.

A NEW INFALLIBLE TOOTHACHE CURE.—A philanthropic correspondent to a contemporary North of the Tweed, can no longer keep his panacea locked up in his own bosom, as he has never known it to fail. For the benefit of humanity he discloses the remedy. It is whisky. We have often heard of sufferers drowning their sorrow in the flowing bowl, and we frequently see the condition of their gums after severe local application of this ardent spirit, but it is in neither of these ways that the real efficacy lies. The *modus operandi* is to “take a teaspoonful of whisky and put the nostril on the affected side of the face into the whisky, pressing with the finger the other nostril ; then strongly sniff up the whisky when the pain instantly ceases.” We have heard an outward application of this comforting cordial stigmatised as “An awfu’ waste of the Lord’s mercies,” but we suppose that toothache would even justify this, and after all it is only a teaspoonful.

BLOOD POISONING AFTER TOOTH EXTRACTION.—Two cases have lately come under our notice of fatal blood poisoning occurring after tooth extraction. In one case, that of a sailor in New South Wales, it seems that the patient had applied some lotion to the afflicted part. Medical witnesses differed as to whether this lotion would have a deleterious effect ; one medical man saying that it was harmless, while another affirmed that if the man had not used it, he would still have been alive. In the other case, that of a boy whose tooth was extracted by a chemist at Framlingham, it appears that the lad had lanced his own gum with a pocket knife, and a verdict of death from natural causes was returned. We cannot be too careful in seeing that all our instruments, especially forceps, are thoroughly well cleaned after each operation, as well for our own protection as for that of the public.

Abstracts of British & Foreign Journals.

THE HUXLEY LECTURE.

On Monday, October 5th, Prof. Michael Foster delivered the first Huxley Lecture at Charing Cross Hospital Medical School, the Institution at which the late Prof. Huxley received the whole of his medical education.

The lecturer began by stating that he proposed to make this first lecture different in character from, and, as it were, a sort of preface to, those which would follow. His successors would, he supposed, each in turn single out some important new advance in science, and expound in detail its bearings on medicine and surgery. It seemed fitting that this first lecture should take account of the condition of science in the day when Huxley took his seat as a student at the school of Charing Cross, as compared with its condition now; but the lecturer shrank from attempting any general survey of the progress of science, as affecting the profession, during the fifty years which had intervened. Nor would he select what might be deemed the most important steps, and expound these alone. He proposed simply to dwell on one or two themes suggested by the history of science and of the profession during the time in question.

The first theme was a special bearing on the profession of the advance of science, which became apparent from a survey of the studies of the medical student in the days of Huxley's studentship, and a comparison of these with the like studies of the present day. An examination of the schedule of compulsory studies issued by the Royal College of Surgeons in the early forties, showed that of the sciences ancillary or preparatory to medicine, no instruction was provided in physics, and very little in chemistry, that little coming in the middle of the student's course, and being instruction by lectures only. Of general biology, nothing was demanded by the College of Surgeons, save what incidentally came in *Materia Medica*, and only a little botany by the Company of Apothecaries. On the other hand, the greater part of each of the three years of study, right to the end of the course, was taken up by what was called Anatomy and Physiology, but was, in the main, Human Anatomy, and which alone of

the studies was taught practically—namely, in the dissecting room. In appreciating the value of such a curriculum as the above, it must be borne in mind in respect to any science ancillary to medicine, that great as may be the practical usefulness of the facts embodied in the science, far greater is the worth of an adequate study of the science as a mental training. An ill-trained mind bungles with the facts which are before it, a well-trained mind can pick up the facts as it goes along. The methods of medicine, the mother of most of the sciences, are at bottom the methods of the children sciences; a training in the latter fits a man quickly for the use of the former. At the present day, physics, chemistry, biology, and physiology have each developed into a body of learning, capable, when rightly taught, of being used as instruments of mental training of great value, the right teaching being that by which in the laboratory the student is made to tread in the very steps of those who have built up the science. This is the chief justification of the study of these sciences being made a part of medical education. In the days of Huxley's studentship, things were very different. None of the sciences in question, perhaps not even physics, presented such a body of truths as could be taught in such way as to serve for a real training to the medical student; what was taught to him was taught merely for the practical utility of the facts. One branch of knowledge only had in that day achieved such completeness, and the machinery for teaching it become so perfected, as to be a real engine of culture, and that was human anatomy. The acquirement of that knowledge was at that time the one real discipline for the medical student, and its value as a discipline even exceeded the practical usefulness of the facts of which it was made up. The authorities of that day were wise in making it the backbone of the student's education. To-day we shall be wise if, departing from their letter, we follow their spirit in leading the student along that path of study which will vest and most swiftly arm his mind to grapple successfully with the series of scientific problems making up the doctor's daily life.

The second theme on which the lecturer desired to dwell was the complexity of the progress of science, and the intricacy of the bearings of even a single scientific observation. No one observation or experiment can be judged as it stands by itself alone. Its effects and so its worth will depend not alone or even chiefly on its own intrinsic merits, but also on the way in which it joins hands with its fellows. The bear-

ings of a new truth cannot be rightly expounded immediately on its birth ; its value hangs on that which went before, and its power rests on that which is to come. In illustration of this the lecturer proposed to consider the bearings of some three or four observations each the result of experiments on living animals made in the years of, or in those following closely upon, Huxley's studentship.

The first such observation was that made by the brothers Weber in 1845, in Huxley's last student year, in which they showed that electric stimulation of the vagus nerve stopped the heart in diastole or, as we now say, inhibited it. If the question be asked, what has been the gain of that experiment? the answer is that its effects have gone far and wide into the whole of physiology, and thus into the whole of medicine, and indeed have not yet come to an end. It has enabled us to understand, and that more and more clearly as succeeding observations have illumined the original one, how the heart is governed by the central nervous system, a matter which, before Weber's experiment, was merely the subject of fruitless contention, and that has shown us how we too may control it. It has become, in the hands of the physiologist, a method enabling them to solve problems which without its aid had baffled them. But perhaps its most far-reaching effects, and those which even to-day cannot be fully measured, lie in having started a pregnant idea, that of regarding the phenomena of life as the outcome of opposing and antagonistic forces, now carefully balanced, now swaying on this side and on that, an idea which has been a guiding light, even if sometimes misused, in our advancing knowledge of the processes both of health and disease, not only in the tissues of the nervous system, but in all those of the body.

The next such observation to which the lecturer called attention is that by Claude Bernard, in 1851, when he showed that section of the cervical sympathetic led to fulness of the blood-vessels in the head and face. The same experiment had been made a century or so before, but dropped still-born; the fulness of its time had not yet come. In Bernard's hand the experiment became the origin, the beginning, and so the cause of all that advance of physiological and medical knowledge which is indicated by the word "vaso-motor." There can be no need to dwell on how this knowledge has entered into and modified our conception of physiological and pathological events, general and special, or how, again and again, it comes to the front in therapeutic endeavours. Yet

when Huxley was a student, the very basis of that knowledge was not as yet assured; only the most advanced were prepared to admit that the blood-vessels had muscular walls. Bernard's experiment had its strength in Henle's histological demonstration, but has in turn been of such effect that could we draw from the web of the medical knowledge of to-day all that has come of it, that knowledge would become in large measure a confused tangle—so much do we owe to one single experiment.

The lecturer next dwelt on Bernard's discovery in 1850 of glycogen. The effects of that one observation are again manifold. It had an immediate and direct effect on medicine in throwing light on that terrible disease diabetes, a light which, even if it has not fulfilled the hopes which were first held, has at least, by pointing the way towards alleviation, saved much suffering, and greatly prolonged valuable life. But this has only been one, and not the greatest of its effects. It has had a most powerful influence as the mother of ideas. It was the first clear direct proof of the synthetic powers of the animal body, and as such has been the parent of great additions to knowledge, more especially in these latter days. But its chief influence has been, perhaps, that by showing how a tissue in a hidden way profoundly affects the blood, apart from any visible event, such as an outward blow, of secretion fluid, or a muscular contraction or a nervous impulse. It was the first exemplar of what we now call "internal secretion." Bernard's experiment has the relation of a father to a son, towards all those researches on the thyroid and other organs which in our day have thrown so much light on the inner workings of the body, and added such powerful weapons to the medical armoury; and further, doubling so to speak on itself, has led us to a knowledge of the work of the pancreas, in the story of sugar, a knowledge which has cleared up much, and promises still more.

The last illustration taken was Waller's observations in 1850 and 1852 on the dependence of the nutrition of a nerve fibre on its continuity with the body of the nerve cell of which it is a process. This discovery, also the direct gain of experiments on animals, was in itself alone of value as a contribution to our knowledge of the influences which the central parts of a cell surrounding the nucleus exert on other parts of the cell, and perhaps we do not as yet fully realise all that the observation teaches. A still greater effect, however, on the progress of physiology and of medicine has resulted from

the guidance and support which it has given to the experimental results of stimulating the cerebral cortex, an effect which yet another result, that gained by the application of the silver method to the histology of the nervous system, is converting into an advance of knowledge of momentous importance. So far as can be seen, the Wallerian degeneration by itself, the experimental results of stimulation by themselves without anatomical support, and the results of the silver method by themselves, would each of them have gone but very little way; the union of the three has produced, and is producing, a movement of theoretical and practical advance, the limits of which it is difficult to foresee.

The lecturer concluded by a few words concerning the influence exerted by Huxley on physiology and so on medicine. Debarred by circumstances from fulfilling his early desire to become a physiologist, Huxley was ever ready with a helping hand to others. If English physiology stands at the present day, as it appears to do, in a sound and hopeful position, that is in large measure due to Huxley's direct and indirect influence.

CATAPHORESIS.

By Dr. W. J. NORTON.

In the case of sensitive dentine, skill, carefulness, and experience are essential. The first onset of the current may at the best cause a slight burning pain. To avoid this contingency, it is well to give the solution five minutes' time to effect a superficial anæsthesia prior to applying current. The applicator is adjusted, and the current, which cannot be too gradually applied, is then brought into circuit. The patient will feel a slight burning sensation, which in a moment will subside, when more current may be added. Each accretion of current during the first five minutes will cause the same sensation. Thus the treatment is followed up, step by step, consulting the patient as to the slight pain, until, in about five to seven minutes' time, it will be found that the current strength may be largely increased without causing any sensation whatever. At this time I carry the current up to from

two and one-half milliamperes, and, after two to three minutes at this current strength, consider the dentine sufficiently benumbed to endure operative procedures without pain. A point of prime importance is to avoid movements or removal of the applicator during the current flow; for, as is well known, a "steady" current produces no reaction of motion or sensation, while a "varying" current produces these reactions most unpleasantly to the patient.

With these hints in mind and with a little experience, not only dentine, but the contents of the pulp-cavity, and even the tissues outside of the tooth, may be effectually anæsthetized via the pulp-chamber. And it may be mentioned in passing, that not only may anæsthetizing substances be thus employed, but also any other remedy—germicide, antiseptic, escharotic, etc.—which it is desired to apply to the tissues above named.

Dental Digest.

COMBINATION FILLING.

By C. W. STRANG.

During the last seven years we have been using a combination of amalgam and oxyphosphate, in cavities not specially prominent, and it is steadily growing in favour because of its excellent record as a preserver of tooth structure. When the cavity is prepared and the dam in place, select a matrix, a piece of file will do, then put enough filings of amalgam in a mortar to fill the cavity and make plastic with mercury; add to this one quarter to one-third of phosphate cement powder and grind together into a dry powder; then put on a glass slab, add the liquid, make into a stiff ball and put into the cavity quickly. The cement sets at once, but the amalgam remains plastic for a little while longer.

When properly manipulated this filling withstands the wear of mastication about as well as amalgam and far better than tin. It adheres to the cavity walls and borders equal to oxyphosphate, but unlike the latter it is not porous and does not become impregnated with the fluids of the mouth. It does not disintegrate at or below the gum margin. It is unshrinkable and in no case have we found tooth structure stained by it. One word of caution—it cannot be successfully used in the presence of moisture.—*Dental Digest.*

LEISURE TIME.

The tendency with a vast number of young men, when once they are graduated, is to relax their efforts and to drift aimlessly along, taking kindly what comes to them, professionally or socially, unmindful of the peril of *passivity*. Thus many a man who made a splendid record as a student has failed to realize success as a physician. Genius alone will not assure it, nor will labour alone without genius ; but a measurable amount of genius, with work rightly directed, will pretty surely win for one a way. But the work incident to success must not only be earnest and in the right direction, but it must be persistent until the end is accomplished. Every idle hour in waiting for business is an added opportunity. These hours, rightly used, cannot make him eminent in everything, but they can, sooner than he knew, render him eminent in one thing.

North American Practitioner.

SCALING OF TEETH.

By Dr. MORFFEY.

I do not know of any operation requiring more thoroughness than the scaling of the teeth. I notice frequently that operators in removing tartar leave slight secretions. If a particle is left it is sure to form a nucleus for more. I take one tooth at a time and finish it thoroughly. Many operators jump from one tooth to another and overlook small secretions of tartar. I am not much in favour of the application of iodine, although it is a good designator of the location of tartar. Aromatic sulphuric acid can be used on what is known as green tartar, but used cautiously, and alkali should be used immediately after. When the tartar is removed pay particular attention to the gums and bring them to a healthy condition as soon as possible, using an astringent. I generally use tincture of myrrh. If I have a case where the gums bleed profusely I use tannic acid. It has a two-fold object—arresting the flow of blood, and thereby keeping the mouth clean, and assisting in healing the gums if there is any laceration. If there are occasions when you must go deep below the gums you can use some anæsthetic.

Stomatological Gazette.

FUSIBLE METAL FOR LOADING LOWER CASES.

Dr. W. H. RICHARDS, of Knoxville, Tenn., loads lower rubber plates with low fusible metal, either for the purpose of making a new plate, for a much absorbed gum, stable by additional weight, or for restoring an old plate to comfortable service cheaply, or for prolonging the use of a temporary plate under which absorption has gone on rapidly, but not so completely as to demand replacement with a new one.

The new plate, after being finished in the usual manner, is oiled on the gum side, and is pressed into soft plaster which has been poured into a tin rim until the plaster covers all the surface of plate intended for contact with gum. After the plaster is set, raise tin rim, until within one-eighth of an inch of its lower edge, then oil all the plaster surface within the rim; pour in plaster sufficient to fill the rim and cover the teeth; separate as soon as hard; cut a dovetailed groove in the centre of plate over the ridge, in depth according to the amount of weight desired; also a gate from heels of plate to rim; place the parts together accurately, hold them in boiling water until the metal is melted, then pour, cool, and finish.

To restore an old plate or prolong the life of a temporary one, the same general instruction will apply, except a roll of wax, well softened, is placed into the groove occupied by the ridge. Place in mouth and require the patient to close the mouth until proper articulation is obtained. Remove, trim wax, and pour up plaster as before directed; wash out wax and cast metal, which will require some undercuts to retain.

The Dental Cosmos.

A COIN TWENTY-FOUR YEARS IN THE
BRONCHUS.

Dr. J. E. H. Mitchell writes: I was called in haste to see R. E., a man aged 60, who was said to be dying. On my arrival I at once saw that he was dead. There was no history of illness except chronic rheumatism. A post-mortem examination was made, and death was found to be due to syncope;

the aorta for 2 inches was dilated, and, together with the valves, atheromatous. On removing the heart and lungs and placing them in the position they occupied in the body when prone, there was seen lying in the axis of the left bronchial tube, with its edge close to the septum of the first subdivision, and in such a position that air could pass freely above it, a flat circular object rather firmly fixed, which on extraction proved to be a half-sovereign. The upper surface was thickly coated with mucus, the lower rusty and only slightly coated. The whole length of the left bronchus was highly congested and slightly ulcerated at the points of contact with the coin. The lungs were normal. The point of interest is in the length of time the coin had lain in the tube, for on mentioning that a coin had been found the daughter at once remembered that twenty-four years before her father was said to have swallowed a half-sovereign, but she did not believe it at the time. The date of the coin is 1866. A second point is the absence of all trouble in connection with it. The above case occurred in the practice of Mr. William Davies, Peckham.

British Medical Journal.

RELAPSING SORE TONGUE.

Mr. Jonathan Hutchinson presented to his post-graduate class a case of the above named affection, as reported in the *Medical Press*. There were large abraded patches upon the surface of the organ, and these resembled a severe attack of herpes. Herpes of the tongue occurred chiefly along the margin and tip: herpes of the tip was exceedingly common. Sometimes these attacks supervened with such frequency that the patients were scarcely ever free from them. The history of the present case was that the disease had persisted off and on for twenty years. At intervals the tongue would be quite sound, but after some months a relapse would occur. The present attack, which had lasted for four months, was the most severe which the patient could remember. On examination of her teeth, one tooth was seen in which an amalgam stopping had been used. Mr. Hutchinson here remarked that he entertained great prejudice against amalgam stoppings in teeth, especially in mouths which were sore. In such cases he always insisted upon the amalgam being removed

and gold inserted in its place. Dentists, he stated, would not believe that any harm arose from amalgam stoppings. But he was satisfied that in certain conditions some chemic solution of the amalgam took place. Most often the tongue became sore opposite the tooth in which the amalgam was present. Moreover, he had often found that patients could tell by means of a slight metallic taste in their mouths which tooth it was in which the amalgam had been placed. Again, he had often seen cases of sore mouth where all the symptoms had been relieved by replacing the amalgam with gold stopping. The peculiar condition of the patient's mouth was most interesting. In some respects the leucoplakia somewhat resembled that seen in smoker's tongue, but more inflammation was present than was usually observed in the latter condition. It was worthy of note that the filiform papillæ had disappeared over a large area. The patient, on being asked if any particular articles of diet caused irritation to her tongue, replied that anything "sharp" did so, and in this connection she instanced vinegar. She also avoided walnuts. Mr. Hutchinson was interested to find that she had herself discovered the irritating effect of walnuts. He pointed out that walnuts were especially harmful in these cases. The old, dry walnuts were possibly not much to be blamed in this connection, but the juice of the rind of the young, moist walnuts was especially irritating. He had seen many cases of sore mouths arising from this cause. Again, such patients should avoid all effervescing waters, and sugar in combination with vegetable acids was very harmful. The remedy for these cases was arsenic.

CONSIDER THE FEELINGS OF PATIENTS.

In the report of society proceedings in the *Stomatological Gazette*, Dr. Knapp states that :—

"No unnecessary pain should be inflicted on the patients. The dentist is intent on his work, and he is thinking of it, and not of the feelings of his patient. I believe that a great many increase their practice, simply because of the fact that they are careful of the comfort of their patients. I believe in the use of all labour-saving, time-saving, and pain-saving.

machinery that we can get hold of ; anything that saves time, pain or labour is money in our pockets. A good lady assistant adds to the comfort and convenience of lady patients, and then they stay longer than boys. Be a gentleman under all circumstances and keep your temper. Serve the true interests of the patient. In the long run it builds up the character of the office more than anything else, and you will create a reputation for yourself that is worth having. It not only does that, but creates in you a desire for better things. You have got to keep up with all the latest knowledge and everything like that. The money-making part of the profession is, comparatively speaking, degrading. What should be our idea is to do our patients all the good we can, and serve their true interests ; it helps us to do good in the world to others besides ourselves. Don't try to do all the practice there is to be done in the city or county. Save your lives a little longer. Save the tempers of the young men and keep your own in good condition. When your practice is such you can't do it in one day, raise the price for it. A man can't have engagements during the whole day and work under that kind of pressure and do good work. People don't like to be hurried in that way. Above all things, have your office cleanly, and be clean yourself."

IMPLANTATION.

By Dr. LOUIS JACK.

It is unfortunate that in too many instances planted teeth, which have become fixed and useful organs, have after several years, from causes not entirely clear, yielded to absorption and have become useless. The termination of these cases seems to come on with suddenness and without warning of the resorptive process. The cause of this result we have to look for in a depressed trophic state of the environment, in which condition it is not unreasonable to expect tissue of repair to be the first to yield. In any defective condition of the nutrition of a part this result is in consonance with well-fixed principles.

We have also to consider that the alveolar process is a pro-

visional structure, and that its tendency is, on the occurrence of irritation or of impaired nutrition or by static conditions, to yield to resorption. The fact that it is provisional would impress on it the tendency to this structural change.

Notwithstanding the prognosis of planted teeth is at present precarious, the promise of useful operations is so large, when selection is made of subjects in sound health and without cachectic taints, that, where plantation is required for the good of the patient, it should be performed. The probabilities are that greater experience will lead to improved methods and more certain results.

Cosmos.

CONGENITAL TEETH.

BALLANTYNE (*Edinburgh Med. Journ.*, May, 1896) delivered a child in 1894, and a few days after birth found that the two lower central incisors were cut. They resembled in their characters teeth discoloured by the use of iron tonics. Two new central incisors appeared in their place about the seventh month. The mother believed that the earlier pair were absorbed; Ballantyne thinks it more probable that they simply dropped out. The child remains healthy. Buist in 1893 detected the two lower central incisors already cut in a child born at term. The gum was swollen and the teeth loose. Both came out within a month, and have not been replaced although the dentition is otherwise normal. Vargas, of Barcelona, in 1895, examined an infant two days old, suffering from tongue-tie and a projection from the lower gum a little to the right of the middle line. It was cut away under cocaine, and proved to be an extra-alveolar dental sac containing an incisor with no root. The literature of the subject is reviewed by Ballantyne. Congenital teeth are usually lower incisors, seldom upper incisors, and very rarely molars. Cases like that reported by Vargas and published by Ballantyne undoubtedly represent ectopia of the dental follicle. The majority simply signify premature development of the teeth. Congenital teeth interfere with suckling, and are ill-developed; they should therefore be removed. They have little, if any, relation to the health of the infant.

British Medical Journal.

USE OF DRUGS.

By Dr. GOWERS.

It is very remarkable how far back the use of our most valued drugs takes us. Rooms were disinfected with burning sulphur before the time of Homer. "We purge sometimes with rhubarb, especially when some subsequent astringent influence is desirable, and so did the old Arabian for the same special reason. The value of castor oil in its chief use was familiar, probably for ages, to the natives of the East and of the West Indies before it was made known in Europe by a physician from Antigua 150 years ago." Aloe was used in the same way long before the time of Dioscorides and Pliny. German peasants taught us the value of ergot in parturition. The old Greeks and Romans used male-fern for tapeworm. The employment of mercury in syphilis by inunction and fumigation dates back to the Crusades. Podophyllum as a purgative is due to the North American Indians.

Lancet.

SOLDERING.

By H. J. GOSLER, D.D.S., Chicago.

Another great annoyance along the line of soldering, and of not uncommon occurrence, is the tendency of solder to *ball up*—and which is invariably due to the endeavour to cause it to flow before the parts to be united are sufficiently heated, for as the affinity of one metal for another is increased by heat, it is imperative to first gradually raise the heat of the higher fusing metal to or near the degree at which the solder will fuse, and after accomplishing this, by applying the solder and then directing the flame upon both the surfaces of the parts, and the solder having previously been fluxed with a thin paste of borax, no difficulty will be experienced in causing the solder to flow nicely with but a small pointed flame from the ordinary blowpipe and without any exertion whatever; but if, on the contrary, the flame be directed upon the solder before the parts to be united are sufficiently heated,

it will fuse within itself and ball up, and if much time be thus consumed the baser alloy or zinc will be burned out, requiring in consequence a greater degree of heat to cause it to flow than otherwise, and as the depletion of the zinc will, to some extent, increase the fusing point and decrease its flowing properties, the liability of fusing or burning the object to be soldered is also increased.

The parts should be fluxed before heating up, and it is always necessary to flux well the surface of the solder before attempting to control it, as containing zinc, renders it so easily oxidizable, it will not flow or cannot be managed unless it is properly fluxed, and in this respect it may be well to emphasize the fact that the borax should be mixed into a thin paste and applied with a small camel's hair brush or similar means, as the quantity used can be governed better and its application be made only where it is needed, thus avoiding the common and by far too generous use of powdered borax, which, as has been previously stated, increases the danger of cracking the teeth, renders the solder more difficult to handle, and oftentimes causes the surface of the work to be freely covered with small pits.

I am of the impression that so far as soldering is concerned the use of the bellows is rarely if ever indicated, and should, in fact, be avoided, for the amount of heat necessary, which is usually very much over-estimated by the way, cannot be so well regulated, and more harm than good is liable to result in consequence; and furthermore, a greater amount of heat than the combination mouth governed blowpipe will give, if properly applied is very seldom required, but to blow a continuous flame is a very valuable accomplishment for the dentist doing gold work, and can be learned by most any one devoting to it a little perseverance and application.

Some little thought and careful observation of our own work in this line will enable us to acquire a degree of proficiency that will render soldering a very simple matter.

Dental Review.

Education in dentistry should be preceded by a better general education than is now required. Our professional standing demands scholars as well as mechanics—refined, esthetic gentlemen, the education of the whole man, as well as the ability to answer a few technical questions.

Items of Interest.

DENTAL CARIES DURING PREGNANCY.

By H. F. VANDERVOORT, D.D.S.

It is generally accepted that the teeth of women are more liable to become carious during pregnancy, and while this condition has been much talked about I do not find anything recorded on the subject showing the relationship between dental caries and pregnancy. I have made no record myself of such cases, but have taken this subject for my paper that I may learn something of a condition or subject that should have our attention. As for dental caries, I believe the chemico-parasitic theory, of which Dr. Miller is the exponent, is generally upheld, at any rate he has shown positively that under certain conditions there is a ferment of a vital or living nature present in the human mouth, and this ferment has the power of self-reproduction. The product of this ferment is lactic acid, which deprives the teeth of their lime salts, and these micro-organisms can live and flourish in the interior of the decalcified mass of tooth structure. Now we all know how they begin business. They first, of course, find a suitable location, which is, in some fissure, or at some point, not properly cleansed, where they secrete the acid, when the enamel is alternately decalcified, and the dentine reached which is soft, and then assisted by the dental tubuli, the interior of the tooth is very quickly reached. This is a brief description of the theory and shows that the influences are directed from the exterior, but in the case of pregnant females, I think the influences are directed from the exterior and interior both, and at the same time, it is said it is due to the neglect or the lack of attention at that time. That certainly has a great deal to do with it, but we find that the patients suffer from ocular trouble and numerous other nervous disorders, and while the condition generally excites a high nervous tension, or we might say, is very displeasing to the nervous system when the patient is easily excited and worried and is troubled with nausea. Now we find a change in the oral secretions which furnishes a more suitable soil for the development of micro-organisms, and from lack of attention such as proper cleansing and use of suitable mouth-wash the organisms have nothing to interfere with their progress of destruction, and from the nervous condition nature is weakened and is unable to protect the organs from within,

it is thought by some that through the demands of the developing fetus the lime salts are abstracted from the teeth ; this, however, I do not believe, for my knowledge of the histology of teeth does not show any place of absorbing the lime salts from them or how carried from the teeth to the fetus, it may be done, yet since the teeth receive nutrition from the blood it would seem that nature was cruel indeed to cease giving nutrition and even rob them of so important a part. It is also thought that if the teeth were deprived of nutrition other bones would suffer too, has it been proven they do not ? I think, probably, they do, but on account of the predisposition of the teeth to caries they suffer most. Now, to conclude, I will say the family physician generally knows of the condition first and I have avoided mention of treatment, for generally when we are called on, we only have to treat acute conditions and the treatment would be governed by the case in hand.

Dental Register.

BACKWOODS DENTISTRY.

By WM. W. BELCHER, D.D.S., Rochester, N.Y.

“While an undergraduate at the Louisville Dental College,” relates a brother practitioner, “I received several letters from a dentist who resided some 150 miles in the interior and was anxious to secure an assistant. To believe the statements made by him, there was no doubt of my making my eternal fortune ; as I was depending on my own exertions to pay my way through College, I concluded, after some hesitation, in accepting his terms of equal partnership.

Borrowing the necessary cash of a friend, I set out on my journey for fame and fortune. After a tiresome ride we arrived at Debre, a place of some 1,000 inhabitants, so it was said, though where the people kept themselves I was never able to ascertain. Upon reaching the ‘station,’ which appeared like a hen coop perched on a small elevation of land, I could see no one who appealed to my fancy as a dentist ; in fact, the only person at the station was a tough-looking party, wearing a rough flannel shirt, with pants tucked in his

boots. I was accosted with the inquiry : ' Be you the den-tis' ? ' I answered ' Yes, sir. ' ' Kem on then, thets my office right daown the street. '

No novel could exaggerate Dr. Fides. I felt, in beholding him, like a man who had read of the dodo without compromising himself by a belief in that bird, but who had at length lighted on an unmistakable survivor of the species in the trackless wilds of some undiscovered country. As our acquaintance progressed, I set him down as the most unique specimen of the genus *Homo* it had ever been my fortune to encounter. He was one of those anomalous men who exist elsewhere as curiosities ; but whom the philosopher must visit in their mountain fastness to see in their full development and possessing a normal status among mankind. As we progressed down the ' main street ' on our way to the office, I observed that all the houses were one story high and under each corner was placed a block elevating the building from the ground ; before nearly every house was perched a long pole with a bottle inverted on the top. This was a ' charm ; ' its special purpose I never ascertained, but the custom was universal. Each householder dumped all refuse in the street. The pigs, which were allowed full run, were the public board of health. On our way to the office, I discovered that my business partner was an ' advertiser ' from way back. Spying an acquaintance across the street he hailed him : ' Kem over here Sandy, I want ter interjuice yer to my pardner. This 'air Professor Davis from Louisville ; ruther dudish, but thet 'air what takes with ther gals, ye know ; Professor Davis air a dandy den-tis ; kem up and let him stuff yer tooth, Sandy. Sandy 'lowed that ' p'rhaps he might. ' This was repeated some half dozen times before reaching the one dental establishment of the town, which, like its fellow structures, was perched on four blocks and appeared as though it might run away with itself some dark night.

The office was jointly occupied by a little Dutch tailor. The dental chair on one side of the establishment and our friend, the tailor, on the other. ' Make yourself at hum, ' said the doctor. ' Naow I hev some bizness outside this afternoon, and I wanten 'splain to you my way o' doin' things. O' corse we all hev our ways—naow my strongholt here is pullin' teeth ; we pull 'em in three ways—old-fash'n'd way, fifty cents ; thet hurts a good bit. ' Odonto, ' seventy-five ; oil of gladness, ' one dollar ; thet's the best, allers pull 'em with th' ' oil o' gladness, ' if ye kin.

The medicine case of my new 'pardner' was somewhat limited, consisting as it did, of two remedies, *camphor* and *vinegar*. For fear that my late associate should conclude to 'push' his 'local' and thus trap the unwary, I considered it my duty to inform the public, that his 'oil o' gladness' and 'odonto' are camphor, simon pure. Vinegar, I was informed, was his sheet anchor; 'Cayn't keep hous' without hit; nothin' like hit fer cleanin' teeth. I jes' putter 'round an' hev' 'em wash the'r mouth out with vinegar a good bit; charge dollar an' a ha'f fer that.'

The laboratory was in a shed adjoining—the plaster and slops were shoved through a hole in the floor, and as all the refuse was dumped through the same opening, I concluded, from the terrible odor, that the pigs had not had a fair chance at it recently.

Observing no tools or laboratory instruments I inquired what he worked with, and learned that he had the whole outfit, vulcanizer, and all, nailed up in a box, 'so's to hev 'em handy in case er fire,' as he informed me. It was quite as handy to send to Louisville for an outfit as to attempt to unfasten the box they were placed in. Why he never put his three pairs of forceps along with the laboratory tools I never found out.

I soon learned that my business partner expected me to do all the work and divide the profits, but as they appeared to be very conspicuous by their absence, this gave me little concern.

Dr. Fides, besides following dentistry, 'farmed it a bit,' and swapped horses or any other commodity. I was told that he was as sharp as a steel trap in a trade, and that the man who could best him on a horse deal was yet to be born. His visits to the office were like cash payments, few and far between.

One day, I had for a patient, an overgrown girl from the backwoods, who looked as though she had been 'brought up by hand,' her teeth were encrusted with black tartar, and as a result they were as dark and uninviting as they very well could be. Dr. Fides happened in, and spying the patient, opened up with: I kno' what's th' matter with thet gal, she's got bla'k kanker--yes'r, I kin tell bla'k kanker az fur az I kin see hit, she's got bla'k kanker ov the gums; naow, doctor, you jist skarify th' gums, and skarify 'em thoro, and thet gal 'll git well—but thet's bla'k kanker, kyant fool me on thet.

About this time I began to have serious doubts as to the

feasibility of gathering a fortune practising dentistry in my present field, as no one had any money, 'hog-killin' time' and 'and when we sell our tobacco,' were the days of promised payment. Both of these periods were somewhat remote, and we concluded not to wait; but again availing ourselves of the good offices of our friends in the city, borrowed money to return to civilization.

It was not without regret that the citizens of Debre saw us depart—particularly the boarding mistress, to whom we were indebted for two weeks board, but the 'doctor' 'lowed he would 'tend to hit at hog killin' time.

Oh, for a touch of civilization once again; no more tin-peddlers for bed-fellows, the luxury of a cake of soap and a whole towel all by yourself!

We often wonder how the girl with the terrible 'bla'k kanker' is progressing; it was an interesting case, and we would like to have watched it closely, for the benefit of suffering humanity, but the allurements of civilization were not to be ruthlessly set aside.

Southern Dental Journal.

HOW CARBORUNDUM IS MADE.

It could not have been made at all—this compound of carbon and silicon which is coming into such universal use as an abrasive—were it not for the electric furnace, with its degree of heat that was quite undreamed of only a few years ago. Discovered by accident in experiments on electric smelting, it is now made in large quantities, and its manufacture is one of the first to employ the electric energy generated by the world-famous power plant at Niagara. We quote a few paragraphs, telling how this power is utilized, from *The Electrical World* Oct. 26. The crude materials, we are told at the outset, are simple enough, being nothing but coke, sand, salt, and sawdust, which are first thoroughly ground and mixed. We now let the article speak for itself.

"The four crude materials having been thus thoroughly mixed, the product is conveyed to the electrical furnaces, situated in an adjoining building, and which have the appearance of rough and apparently crude, oblong brick boxes,

made without cement, mortar, or other binding materials. Provision is made for five of these boxes, which extend down one side of the large spacious building, each of them measuring about 15 feet in length by 7 feet in width and the same in height. In the centre of each end is placed a large bronze plate, and these are connected by means of four large copper cables to massive copper bars extending under the floor at either end of the furnaces. Connecting with the inner surfaces of the bronze plates are 120 carbon rods, 60 to each plate. These carbon rods are three inches in diameter and something over two feet in length, and are so placed as to pass through the end walls of the brick box or furnace, projecting into the interior and toward each other, thus constituting the terminals. Into this rectangular brick box the mixture that has been prepared in the stock room is introduced, about ten tons constituting a charge, and through the centre of the mass of mixed materials is placed a core or cylinder of granules of crushed coke extending from the carbon rods at one end of the furnace to those at the other end, a perfect electrical connection through the furnace, by means of the bronze plates, carbon rods, and the core, being thus made."

Into this furnace is turned a powerful electric current of 1,000 horse-power, all of which is transformed within it into heat. The results are thus described :

"A short time, perhaps two hours, after the turning on of the current, gases begin to escape through the crevices of the brick walls of the furnace, and, being ignited, burn with a lambent blue flame. As the process continues the outer walls and top of the mass in the furnace slowly rises in temperature through the transmission of the intense heat from the core, the entire top of the mass being red-hot in about 12 hours. After the current has remained on for the period of 24 hours, or until such time as the workman in charge recognises as sufficient, it is switched off in the transformer building, the flexible cables are disconnected from the bronze plates and others are connected with the plates of the next furnace in the series of five, which in turn are carried through the same operation.

"One end of the first furnace is then removed and a cross-section through its centre exposed, thus permitting of a ready inspection of the results of the operation. In the centre is the granular core, in the same position in which it was

originally placed, but it is now purified of all foreign substances. It is now pure carbon and has lost about one-fourth of its weight; this loss represents the volatilized impurities. The presence of grains of graphite disseminated throughout its mass indicate that its temperature must have been near 7,000 degrees F.—the point of graphic formation. Surrounding the core in the form of a cylinder is a beautiful crystalline formation, the crystals being constructed on lines radiating from the centre. The crystals in immediate contact with the core are looped or built together into one concrete mass; as the distance from the core is increased, the size of the crystals diminish rapidly, until at about 15 inches all crystallization ceases and an amorphous material is encountered, of a whitish grey colour, for a distance of two inches, when a sudden change occurs to a black mass composed of the original mixture, now held together in a cemented state by the fusion of the salt. The crystalline and amorphous material, lying between the core and the outer black mass is carbid of silicon, being composed of equal atoms of carbon and silicon. About two tons of carborundum is produced in one furnace run, and to prepare it for the market it is first passed under heavy iron rolls for the purpose of crushing apart and separating the individual crystals, after which it is treated with an acid and water-bath to remove solubles. It is then dried and sifted, to separate the various sizes."

Of the uses of the compound thus made—which, it may be said in passing, is so hard that it will scratch any other substance except the diamond—we are told, at the close of the article:

"Owing to the limited facilities heretofore existing, the production of carborundum has been so small—not over 300 pounds per day—as to practically restrict its uses to the finer trades, such as the dental and manufacturing jewellers' trades, fine-tool grinding, pearl-grinding and kindred industries. The development in the dental trade especially has been remarkable, and in the form of disks, lathe and engine wheels and cloth-finishing strips, carborundum is rapidly displacing all other abrasive substances in this important industry, not only in the United States but throughout Europe."

The Literary Digest.

Dental News.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.

Livingstone Scholarship (100 guineas) awarded to Mr. C. Jerome Mercier.

Huxley Scholarship (55 guineas), awarded to Mr. F. B. Pinniger.

Epsom Scholarship (110 guineas), awarded to Mr. L. C. Badcock.

University Scholarships (60 guineas each), awarded to Mr. H. S. Clogg, and Mr. R. J. Willson.

Entrance Scholarships are also awarded to Mr. W. B. Blandy (60 guineas), and Mr. Charles H. Fennell (40 guineas).

PROSECUTION IN NOTTINGHAM UNDER THE DENTISTS' ACT.

AN UNSUSTAINED CHARGE.

At the Nottingham Summons Court, before Mr. E. W. Enfield and Ald. Fraser, Edward Jessop Hadley, described as a dentist's assistant, of Market Street, was summoned, on the information of Frank Johnson, of 37, Willersley Street, for that he did unlawfully take or use the name or title of dentist, or of dental practitioner, or some name, title, addition, or description implying that he was registered under the Dentists' Act, 1878, or that he was a person specially qualified to practise dentistry, he not being at such date registered under the Act.

Mr. Johnstone prosecuted on behalf of the Nottingham and Notts. Dental Association, and Mr. Arthur Wright (Leicester) defended.

Mr. Johnstone said the prosecution in this case had been instituted under Section 3 of the Dentists' Act, 1878, as amended by the Medical Act, 1886. That section provided that, on and after August 1st, 1879, persons claiming to be qualified dental practitioners who were not duly registered should be liable to a penalty, upon summary conviction, of £20. There had been several prosecutions under this Act in

various parts of the country ; one of them was at Newport Police Court on May 22nd.

Mr. Wright objected to this statement on the ground that it afforded proof of a malicious prosecution. He should show to the satisfaction of the Bench that the prosecution was a malicious one.

Mr. Johnstone, continuing, said prosecutions had already been heard under this Act, and convictions had been obtained where even it was admitted that the defendant had, in course of conversation stated that he was not registered. The evidence he should put before the Bench that day would show that the person who was now there as the defendant had distinctly stated that he was a fully qualified man and a dentist. Those were the words used in the section of the Act, where a person was liable to a penalty of £20, and if that case was proved he should ask the Bench to inflict the full penalty, because other cases had been heard where managers in the service of Messrs, Goodman & Co., had been convicted, and it seemed that previous convictions were no warning to them. He thought there would be some question as to the identity of the defendant.

Frank Johnson, of 37, Willersley Street, stated that he was a clerk in the employ of Messrs. Johnstone and Williams, solicitors. Acting under their instructions he went to the premises occupied by Messrs. Goodman & Co., in Market Street, and asked for Mr. Goodman. He saw Dr. Loveday, who told him Mr. Goodman was not in. Witness asked Dr. Loveday if he was a qualified dentist, and he replied that he was not, but that there was a qualified dentist on the premises. He was shown into the operating room, and there saw the defendant, who said his name was "Mr. Hadley," and that he was a registered and qualified dentist. Witness told him he wanted his teeth seeing to, and defendant thereupon examined his mouth. He told him there was a slight inflammation of the left jaw, and that it would be necessary to extract five teeth. (Laughter.) Witness told him this was a large order, and said he would call again on the Saturday. On the following Monday he again went to the premises and asked Dr. Loveday if he could see Mr. Hadley, who had attended to him on the previous Friday, and he replied that Mr. Hadley had left some time. He asked the doctor what his name was, and he replied that if he particularly wished to know his name was Jones. He subsequently laid the information against the defendant at the request of the Nottingham and Notts. Dental Association.

In cross-examination witness said he was sent to the premises with a view to ascertaining if Mr. Hadley was a qualified man.

Mr. H. Blandy, L.D.S., 2, Postern Street, stated that he was a member of the Committee of the Nottingham and Notts. Dental Association. On the 16th September he telegraphed to "Edward Jessop Hadley, 163, Cheltenham Road, Bristol." He produced the reply which he received thereto.

Mr. Wright interrupted, submitting that the telegram was not admissible, and that it was no evidence against the defendant. There was no proof as to who sent the telegram.

Mr. Johnstone said the question was this ; he knew that the service had not been regularly effected, and that morning he had not anticipated proceeding further with the case than applying for a warrant. He had not expected to find the defendant present, because it was clear from the evidence of the last witness that when the detective officer went to serve the summons defendant was missing, and it was stated that he had left the town. Therefore, he should have to ask for an adjournment of the case, so as to enable him to communicate with the person whose name and address were on the telegram.

Mr. Wright strongly opposed an adjournment. Mr. Hadley was a properly qualified dentist ; his name appeared in the register for the current year. Rather than submit to an adjournment of the case he was ready to admit that Mr. Hadley's wife sent the telegram. The telegram simply said, "Am better, Hadley."

Mr. Johnstone : The telegram says, "Am at home."

The Bench decided that the telegram was not admissible, as there was no evidence upon it.

Mr. Blandy cross-examined by Mr. Wright, said the proceedings had been instituted in consequence of a resolution adopted by the Nottingham and Notts. Dental Association. He was the member of a committee appointed to initiate the proceedings. The Association were determined to put down irregular practice.

For the defence Mr. Wright called Henry William Meadment, florist, of Burton Road, Cotham, Bristol, who stated that the defendant Edward Jessop Hadley was related to him by marriage, and he had known him about ten years. He had been residing in Bristol until recently, and practising in

that city as a dentist, at Bristol Bridge, Old Market Street, and Cheltenham Road.

Cross-examined by Mr. Johnstone : Mr. Hadley ceased to carry on business in Cheltenham Road about two months since.

Mr. Loveday, L.S.A., of 51, Burton Street, Nottingham, stated that he had managed a practice for Messrs. Goodman & Co., in Market Street, Nottingham. He had been in their service about three years. It was the custom of Messrs. Goodman to employ only qualified men. He had known defendant about two months. Defendant was a qualified man, and his name appeared in the register. Witness recollected the witness Johnson and another man calling on him. They asked him the name of the man who attended on Johnson the previous Friday, and witness did not tell them. He could not see why they should want to make inquiries of that kind. They then asked where Mr. Hadley was, and he replied that he had left a long while. He did not intend them to infer that Hadley had left some weeks or months previously. The person who accompanied Johnson said he came from the detective department, and that he had a right to ask questions. Witness said, "Yes, I can tell you are a detective." The officer said, "I see you have been making observations," and witness replied, "Yes, I can tell you are a detective by your boots."

The Bench decided to dismiss the case, and granted £6 (inclusive) as costs.

ANOTHER DEATH FROM CHLOROFORM.

Mr. J. J. Thorney (borough coroner) held an inquest in Hull respecting the death of Maria Elizabeth Crowther, who died while under the influence of chloroform which had been administered previous to a dental operation being performed.

Mr. George William Crowther, 14, Sharp-street, husband of deceased, gave evidence of identification. Her age was 25 years. Her teeth were so bad that she could not eat, and it was therefore determined to have them removed. Witness arranged with Mr. Hart, dentist, to take them out, and fit in a new set. He and his wife saw Mr. Wyllie, surgeon, on Saturday, and arranged that he was to attend at Mr. Hart's.

Mr. Wyllie said he attended the deceased in her confinement about 11 months ago. He had not noticed any weakness of the heart. He attended at deceased's house with Mr. Hart for the purpose of administering chloroform, preliminary to Mr. Hart extracting her teeth. Mrs. Crowther seemed in the best of health, and they commenced about three o'clock. Deceased went readily under its influence, and became fully influenced in about five minutes. Mr. Hart then commenced to extract the teeth, and there appeared to be no difficulty in the extraction. Witness renewed the chloroform from time to time, because he found consciousness of pain was returning. He renewed the dose perhaps three times, using about a quarter of an ounce during the whole time. Everything seemed to go on right. On one occasion Mr. Hart removed the gag to examine the mouth, and he saw that six teeth were remaining. He closely examined the patient then, and she was going on all right. Her breathing was good. The operation was finished about twenty or twenty-five minutes from the commencement. The patient was on a couch in the kitchen. When Mr. Hart removed his hand from the mouth witness saw that the breathing had stopped, and the lips lost their colour. He then began artificial respiration, and continued that for about two hours. She gave two slight moans when he began, but showed no signs of life afterwards. He sent for Mr. Aikman some time after. He was not quite sure she was dead. He kept on hoping. He heard the heart beating at the end of two hours from commencing artificial respiration. The chloroform had paralysed the lungs and caused asphyxia. He had administered chloroform more than 1,000 times without any mishap. The dentist's operations no doubt interfered with the breathing.

Mr. Aikman, surgeon, said he saw deceased about five o'clock on Tuesday night. It was difficult to say if she was alive. Mr. Wyllie was still carrying on artificial respiration. Various methods were tried to restore consciousness. Witness had made a post-mortem examination of the body, which was well nourished and free from disease. The heart was perfectly sound. Death was due to asphyxia, caused by chloroform. He thought the operation would interfere with breathing, apart from the chloroform.

The jury returned a verdict "That deceased died from asphyxia, caused by the use of chloroform, administered to her for the purpose of extracting her teeth."

THE RELATIONS OF THE QUALIFIED MEDICAL MAN AND THE UNQUALIFIED DENTIST.

The following letter to the Editors of the *Lancet*, and their reply is of interest.

"Sirs,—1. Is it in accordance with professional etiquette for a qualified practitioner to administer an anæsthetic for an unqualified and unregistered man practising as a dentist and advertising with large handbills on every available space? 2. Would the Medical Council regard this as infamous conduct? 3. Is it a valid excuse for a practitioner to plead his ignorance of the man being unqualified? 4. A qualified dentist is absent from home owing to accidental illness and leaves his practice in the hands of an assistant who is unqualified, but is believed to have passed his preliminary—should he not be treated in the same way? 5. Is not the dentist to blame for leaving a man in charge whom the patients naturally imagine qualified and even practitioners who administer anæsthetics for him plead their ignorance of his being unqualified?"

I am, Sir, yours faithfully,

Oct. 5th, 1896.

M.R.C.S.

* * 1. No. 2. Probably; we cannot answer for certain. More convictions fail to be secured before the Council from the ineffective and unpractical way in which the complaint is made than because the sinner meets with sympathy. 3. If he is truly ignorant he cannot be blamed. 4. It seems to us to make no difference whether the unqualified man is acting avowedly for himself or for an employer if he is acting independently of that employer and free from all supervision. 5. This question appears to refer to some special circumstances, and we must be excused giving an answer whilst in ignorance of those circumstances. It is difficult to see how the ignorance of the patients is to be proved or the ignorance of the medical men disproved.—Ed. L."

ROOT CANAL FILLING.—When thoroughly cleaned and dried, with Donaldson nerve broach work in up to the apex as much creamy oxichloride as possible; then drive in tightly a splinter of orange or cedar wood (smaller than the canal) as far as possible, and leave it there.

Dr. Allen.

HUNGARIAN DENTISTS' ACT.

It has for a long time been a disputed question whether dentists who have obtained dental diplomas abroad should be permitted to practise in Hungary. Considering that only qualified medical men are allowed to practise dentistry in Hungary, and that there is no special examining board for dentistry in this country, the Government has declared that for the future a licence granted in another country will be valid only if its possessor is a qualified medical man who acquired his diploma of M.D. in one of those universities which are recognised in Hungary.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

UNQUALIFIED DENTISTS.

A Case of Scandalous Ignorance and a Case of Gross Presumption.

Sir,—Kindly allow me, through the medium of your Journal, to bring before the profession two cases which have recently come under my notice, and which clearly demonstrate the necessity of an amended Dentists' Act for the benefit and protection of the public.

The first case is a very painful story. It is of a little girl who was taken to the nearest "dentist," (an unqualified man) to have a temporary tooth removed. The process of absorption of the temporary teeth, and also their relation to the developing permanent teeth was evidently unknown to this "dentist," whom the public recognise as belonging to our profession; for on the temporary tooth coming easily away without fangs, he said he "must now extract the roots," and straight away dug down and extracted the developing bicuspid.

The second case is that of a servant who at the beginning of this year was living at Barnsley. This young woman came to me to have the stumps of three teeth removed, all of which had been broken in by a chemist or herbalist whilst under "gas" whilst living at Barnsley. She asked me to administer gas, which I did, and removed the stumps. On recovery, she told me she had no had the gas given that way before, and that she remained in it an hour. I learnt from her that it was given on a handkerchief. Thus it appears the celebrated case of Priestley at Idle is not an isolated one.

I am, Yours truly,

Huddersfield.

J. H. MILNES.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of AUGUST, 1896.

| | |
|---|------|
| Number of Patients attended | 817 |
| Number of Extractions | 617 |
| Number of Extractions under Anæsthetics | 158 |
| Gold Stoppings | 52 |
| Other Stoppings | 121 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 222 |
| Gold and Porcelain Crowns | 8 |
| Inlays | ... |
| Total | 1178 |

ERNST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

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British Journal of Dental Science.

No. 691.

LONDON, NOV. 2, 1896.

VOL. XXXIX.

ON THE ADVISABILITY OF INSERTING DENTURES IMMEDIATELY AFTER EXTRACTION IN CERTAIN CASES.*

By E. P. COLLETT, L.D.S. Eng.

Before discussing the exact subject implied in the above title we must first make some preliminary observations on the steps which lead up to it.

The presence of useless teeth and stumps, even apart from the frequent association of abscesses and inflammations of the gum, leads to such a general catarrhal condition of the whole buccal cavity, tongue, and pharynx, that relief has to be sought either by remedial treatment or extraction in order that something like a sanitary condition may be obtained.

I am sure there are times when we all are somewhat puzzled to decide on the spur of the moment whether to cut off or to extract broken front teeth.

Take the case of a typical young girl of eighteen, with say, the four upper incisors black and broken, and with abscesses that would take weeks to cure, even if curable. Let us say for the sake of argument, that this young person cannot afford to pay one an adequate fee for crowning these roots properly, so nothing remains but to insert a denture.

The next thing one has to decide is, "Am I to extract or am I to cut off these horrible teeth?" Wherever it is possi-

* Read before the Manchester Odontological Society.

ble to gain the patient's confidence sufficiently to do what you like with the mouth, I say, and say unhesitatingly, *extract*, and extract at once, for it is quite certain that some day, these roots, if left in, will give trouble, and have ultimately to come out. I must take this opportunity to protest against the iniquitous and increasing custom, especially amongst the lower class advertising dentists, of leaving foul roots to discharge pus into the mouth, pollute the breath, and cause endless troubles. How often after clearing a mouth completely of all stumps and bad teeth, do we not find an immediate improvement in the patient's general health; probably due to the improved sanitary condition.

But to return to the case under discussion; we have decided to extract the four teeth, and then the main problem of this discussion arises. How soon can we insert the new teeth, for our patient does not wish to be seen by her friends and admirers in the edentulous condition. I answer, take your impression at once, make and try in your plate as soon as possible, whether it be of gold or vulcanite, and plant the new incisors well up the sockets a quarter, or even half an inch up under the gum, taking care that the plate goes into the mouth well within 24 hours of the extractions, and allow the gum to heal up around the artificial teeth. Tell the patient that the plate is to be worn day and night, and only to be removed for purposes of cleansing; by these means you gain a double object: your patient gets used to the foreign body in her mouth much quicker than she would do if continually taking the plate in and out, and you also prevent any unsightly line of union between the gums and the new artificial teeth. The *shrinkage* also of the gums seems much more gradual and is less in degree, for though the shrinkage of the alveolus may be unaffected, yet the tab of tissue folding over in front of the teeth makes this absorption less apparent; for if the artificial teeth are pressed sufficiently high into the sockets,

even after two or three years there is no *space* between the gum and the teeth, though naturally the gum is flatter than formerly. There is another advantage, in that you maintain the exact arch that nature originally assigned to the particular mouth, and in after years it may be useful, when the other teeth come to be lost, to know the relative position of the incisors in the mouth.

There is another class of cases where this immediate insertion of teeth is most useful, viz : in those mouths where the incisors are long, rapidly loosening, and protruding. How often we have patients with a mouth of this character, who come to us for advice, and here again, I say, extract and take your impressions at once. In these cases it is better to select teeth that are narrower than the natural ones, and while planted quite half an inch up the sockets, can have their tips inclined much further in than the teeth just extracted, a slight space being left between each tooth. Here the improvement in appearance is very great. When the Denture can be inserted the same day as the extraction, the results seem best of all, and experience shows that the gums are not so sore as when we wait till the day following, for then the process of healing by granulation has commenced.

In advocating the above method of immediate insertion of Dentures, I do not claim any originality whatever, but am simply recording the way I have dealt with certain cases for the last seven years or so. I shall be very glad to hear what other speakers have to say on this subject.

Electricity is a practical force in the treatment of dental caries. It is being successfully used for obtunding dentinal sensibility by cauterization, for the removal of caries and formation of cavities, for packing and finishing metal fillings, and for bleaching teeth by cataphoresis.

Dr. Jack.

INTRODUCTORY ADDRESS.*

By CHAS. W. GLASSINGTON, M.R.C.S., L.D.S.Ed.

Gentlemen,—It has always been my custom to give a short address before commencing my lectures on Dental Materia Medica, Pharmacology and Therapeutics, which has consisted of (what has been intended for) “good advice” for Dental Students. I am unaware whether all my colleagues do the same ; if so, and the Students of the National Dental Hospital carry out all their kind intentions, all I can say is, they (the students) should have a very successful career before them.

I have lectured on this subject for the past 8 years, with, I think, more or less success. I have in addition attended, by the courtesy of the “powers that be” of the Royal College of Surgeons of England, the *Viva Voce* Examinations which Dental Students undergo. At these examinations I have heard questions asked on Dental Materia Medica and Therapeutics, and in the written examination a set question on this subject has occasionally been given.

In former years dental students had to attend a course of lectures on Materia Medica and Therapeutics at a General Hospital, when, without any reflexion on the teachers thereat they learnt little on nothing of the action of drugs on dental tissues.

Two or three years ago it was pointed out to the Royal College of Surgeons, that a course of Lectures on Dental Materia Medica and Therapeutics was being given at this School, and after awhile these Lectures were acknowledged by that body, and dental students who attended them were exempt from attending the course at a General Hospital. That the Lectures given here are of much more value to the

* Given at the National Dental Hospital, London.

dental student than those he would have to listen to at the General Hospital I can safely assert without the least conceit. At the General Hospital the Lectures are for the medical student, *not* the dental.

In my time I learnt that Carbolic Acid and Creosote relieved toothache, that Arsenic destroyed the pulps of teeth, and Iron, Matico and Tannin were useful in stopping hæmorrhage after extraction, and other equally important facts ; but of the action of these and other drugs on the teeth I learnt nothing. I need scarcely say this is not sufficient for the dental student, or at all events he would find himself very awkwardly placed, if this was all he knew when presenting himself for the L.D.S. Eng.

According to the new Regulations of the College, dental students who register after January 1st, 1897, will be exempt from attending any lectures on this subject, either at a Dental or General Hospital.

New subjects such as Dental Microscopy and the Surgery of the Mouth, have been very properly introduced, but *Materia Medica* has been deleted. The why and the wherefore of this I cannot fathom.

In a few years to come, should a Candidate be asked the pharmacological action of Carbolic Acid, the difference between the action of Tannic and Gallic Acids or when he would prefer to give Iron or Ergot in a case of alveolar hæmorrhage, or any like question, he may find himself in a difficult position. It is true he may have gained some inkling of these matters from his lectures on Dental Surgery, but this subject is so large in itself, that time does not permit of the lecturer going deeply into the action of the various drugs which act on the Dental tissues.

To sum up in a few words, the case stands thus—Candidates who now present themselves for the L.D.S. Examination must have attended a course of lectures at a recognised

Medical or Dental School, on *Materia Medica* and *Therapeutics*, and be prepared to answer any questions on this subject. In the future they will not be bound to attend any such course, but whether they will be expected to know anything of the subject, and must be prepared to answer questions on it I know not.

That it is important Dental Students should know how drugs act on the Dental tissues, I need scarcely say, but the way they are left in the future to gain this necessary information is, by the recent action of the Royal College of Surgeons, an open question.

Now as regards "good advice." To all Students who are commencing their professional career I would say two words—"Take Notes." Never omit to carry a rough note book, in which you can jot down the various, and more or less valuable, information you will hear from your teachers. Then when you are doing your home work these notes should be transferred to other note books under the heading of whatever subject the note has been taken. This may be tiring at first, but becomes easy when you set about it in a systematic manner, and of great value later on.

During your career at a Dental Hospital you will often be puzzled when you are told by Mr. A. to stop a certain tooth in one way, by Mr. B. in a different way, and by Mr. C. in still another way, and you will wonder which is right. But there is no occasion for wonderment. Different men have different ways, therefore try each method as advised (taking notes in each case), and afterwards you will soon see which you prefer. But it is of no practical use trying the different methods unless the student takes notes. Do not trust to your memory. Some men tell you they have made a "mental note." I do not believe in "mental notes." I like to see them down in black and white.

The beginning of this course of Lectures is chiefly of a

theoretical character, later on it is more practical, and you will then see how important these earlier lectures are. When the course is finished, you will have ample opportunity of testing what you hear from me, and whilst you have that opportunity, take advantage of it. Try for yourselves how drugs act on the Dental tissues, and take notes of your case whenever possible, so that when you start in practice for yourselves, you will know the value of using one drug in preference to another.

As regards the various text books you should read, those on *General Materia Medica* and *Therapeutics* are very numerous, but perhaps the best for Dental Students is that of Dr. Mitchell Bruce. Those on *Dental Materia Medica* and *Therapeutics* are not so numerous. Dr. Gorgas' work on "*Dental Medicine*," is most excellent. My own book, as you will see by the syllabus, is amongst the list of those recommended by the authorities of the Hospital. Any further words from me in reference to it would be out of place.

In concluding these introductory remarks, I cannot impress on you too much the importance of note-taking. I mean not only at lectures, where it is sometimes difficult to follow the lecturer, but more particularly in your daily work.

FRACTURES OF THE JAWS.*

By Mr. LOFTUS H. CANTON.

Mr. President and Gentlemen,—In treating the above subject, I have divided it under four main headings, namely; *Causes, Symptoms, Complications, and Treatment.*

Causes. The causes are very numerous and varied, and comprise kicks from a horse, falls from a height, blows from

* Read at the Students' Society, National Dental Hospital.

a fist, slipping whilst walking, gunshot injuries, and even violent muscular action has been known to fracture the Inferior Maxilla.

Now it is not very probable that patients who have had their maxilla fractured from the above causes would go to the Dental Surgeon, although it is very possible, but there is one cause which is of the utmost importance to the dentist, that is, fracture due to the extraction of a tooth,—which may be due to unskilful treatment—although unskilful treatment would, I assume, never be attributed to a student of the National Dental Hospital.

Fortunately there are very few cases caused by unskilful treatment at the present day, partly owing to the more intimate knowledge of the Anatomy of the Maxilla, and partly because better forceps are constructed; nevertheless fractures do occur during extraction, however skilled the operator may be, and it is very advisable to know how to treat them.

Nature and Position of Fractures.—Fractures of the Inferior Maxilla are in the majority of cases compound towards the mouth, though the skin is very rarely involved. Occasionally it has happened that great violence has fractured the condyle, coronoid process, and even the ramus. In such cases the fracture is seldom compound, no doubt due to the bone being too deeply seated.

Usually if the body of the jaw is fractured, the fracture takes place in the canine region; this is owing to the great depth of the canine tooth which consequently weakens the bone at that point.

The symphysis has often been fractured, but this fracture seems more likely to occur in children, possibly because the two halves are not so firmly united as in the adult.

The direction (except at the Symphysis) is usually oblique, and is generally at the expense of the outer plate of

the anterior fragment, and the inner plate of the posterior fragment. The Ramus and Coronoid process are seldom injured, because these portions are so well protected by muscles.

When the condyle is fractured, the fracture usually occurs below the attachment of the External Pterygoid muscle. In the Superior Maxilla the position and extent of the fracture varies greatly according to the cause.

The Nasal process has been fractured by blows which have also driven in the nasal bone.

On several occasions the two Maxillæ have been separated in the median suture, and on one occasion the Maxillary and Palate bones were separated in the middle line. The above conditions were brought about by great violence.

Symptoms. The symptoms are usually well marked if the Inferior Maxilla is concerned. The patient will complain of pain, and will feel a slight grating when the jaws are pressed together. The alteration in the level of the fragments produces more or less irregularity of the teeth; the patient usually endeavours to keep the fragments in position with his hand. Sometimes it happens that the fracture is not apparent at first, in such a case the jaws should be grasped on each side, at the same time introducing the forefingers into the mouth, and there will be no difficulty in detecting the movement and crepitus between the fragments.

Fracture of the body of the jaw may occur in one or in several places. When a fracture occurs on one side of the median line, the Temporal and Masseter muscles very often displace the smaller fragment by drawing it outwards and a little forwards, consequently if the line of fracture is very oblique, the bones override each other to a considerable extent. In double fractures of the body of the jaw, one being on each side of the middle line, the displacement is most marked. The central loose portion is pulled downwards and back-

wards by the muscles of the chin towards the Hyoid bone, whilst the lateral portions are drawn outwards and forwards.

There is a very slight displacement when the Ramus is fractured it being well supported on each side by the Masseter and Internal Pterygoid muscles. When the neck of the Condyle is broken, the Condyle is drawn forwards and inwards on to the Eminentia Articularis by the External Pterygoid muscles, and the chin is turned slightly *towards* the affected side, and not *from* it as would be in the case of dislocation. The Coronoid Process is seldom fractured, the displacement (if any) being very slight. The Temporal muscle might draw it upwards and backwards. The symptoms of fracture of the Superior Maxilla resemble in many cases those of the lower jaw. Usually there is more or less crepitus between the fragments, but I think there is a greater tendency for the parts to keep together. The fracture is sometimes accompanied by looseness of the malar bones, and in one case the external angular process of the frontal bone was fractured, and at the same time the malar bones were loosened and torn away from their attachments.

Complications. Although one might expect rather severe hæmorrhage as the result of fracture of the lower jaw, in reality this seldom happens. No doubt the fact is due to the elasticity of the Inferior Dental Artery which stretches sufficiently to avoid rupture. Occasionally when the face has been severely lacerated, the facial and transverse facial arteries have been injured. Dislocation and fracture of the teeth are often met with as the result of a blow or direct violence.

If the Inferior Dental Nerve be injured, paralysis and neuralgia may immediately result or may occur at a later period, in the latter case the pressure arising from the formation of a callus would be the immediate cause.

The base of the skull has been injured on several occasions, the result of falling from a height on the chin, in one case

the condyle was driven through the glenoid cavity, producing a fracture of the middle fossa of the base of the skull.

The formation of an abscess is a common result of fracture, usually the suppuration is limited to the injured part, the pus escaping into the mouth through the lacerated gum; sometimes, however, the pus burrows under the jaw, and as a consequence portions of the jaw become necrosed, these necrosed fragments producing considerable deformity.

If the abscess burst externally, salivary fistula is most likely to occur.

Dislocation as the result of fracture is very rare, only two such cases being known.

If care be not exercised in keeping the fragments in their proper position, Irregular Union is very likely to take place.

Failure of the parts to unite is not at all uncommon, and is usually due to the fractured ends becoming necrosed—the slightest necrosis being sufficient to prevent union.

In a few cases—bony union between the fractured portions having failed—false joints have been formed, that is to say, the union has been effected by the formation of fibrous tissue; such cases are, however, very rare.

In the Upper Jaw, hæmorrhage owing to the greater vascularity of the part, is much more copious, and on many occasions the Internal Maxillary Artery has been injured with fatal results.

Secondary hæmorrhage is not infrequent.

Splintering of the bone is also more common in the upper than in the lower Jaw, especially after gunshot injuries; in such cases it is nearly always advisable to leave the fragments alone.

Injury to the Infra Orbital-Nerve is a common result in cases of severe fracture and comminution of the Superior Maxilla—if the nerve is severely damaged it may be permanently paralysed.

Treatment.—

In the lower Jaw the apparatus employed to keep the fragments in apposition have been divided into four groups.

1. Bandages or Slings. 2. Splints. 3. Ligature of the teeth. 4. Wiring the bony fragments.

The simplest method is that which is known as the four-tailed bandage. This consists of a piece of roll bandage about a yard long and three inches wide. A slit is made in the centre about four inches in length parallel to an inch from the edge, into this split the chin is to pass. The two ends are then cut to within a couple of inches of the opening for chin, thus making four tails to the bandage. To apply this, the narrow part of the slit is placed a little below the lower lip, and the broader beneath the jaw. The two tails corresponding to the lower part are then to be carried over the top of the head, the remaining ends are crossed over them and tied at the nape of the neck. The ends of the two bandages are now joined together.

Another very simple method for keeping the fragments in their right position is the Gutta-percha Splint, but it is generally used in combination with the four-tailed bandage.

A piece of Gutta-percha is cut so as to resemble the four-tailed bandage, but there is no slit made for the chin, and the ends are only made sufficiently long to pass up the sides of the jaw.

It is then softened in warm water, lined with lint, and adapted to the jaw, the chin resting on its centre. One of the cleanest and most comfortable devices yet invented for treating fractures of the Lower jaw is that known as the "Hammond Wire Splint." (Mr. Hammond was formerly a member of the Staff of this Hospital.) It is adjusted as follows :—

First of all bring the parts into apposition and fix them temporarily together by means of silk passed outside the

second tooth on each side of the fracture. Next take the impression with very soft wax, at the same time supporting the chin with the left hand. Now cast the model, and if there is any displacement, saw down between the teeth corresponding to the fracture, and fix the pieces in their right position. Then take a piece of iron wire (stout hair-pin size) and fit it round the teeth on the level with the gum margin; join the two ends with Silver solder. Now cut several five-inch lengths of fine soft iron binding wire.

To apply the splint, gently place the frame over the teeth, keeping it in place with the left hand, and with the right hand pass one of the wires between the first and second molars on the left side, directing it in such a way that the end will come out under the inner bar of the frame. Catch hold of the wire with the left hand and turn it upwards and outwards over the inner bar and under the outer. Then cross the ends and turn them aside. Do the same thing on the right side and in as many places as may be thought advisable. With a pair of small pliers twist the several wires nearly tight. Take care that the pressure is uniform, and then twist the wire quite tight and cut off the ends at about half an inch from the frame. Finally tuck each piece under the frame. If after a day or two the teeth become loose, tighten the wires a little more.

Another form of treatment which is applicable to either jaw consists in capping several teeth together on both sides of the injury.

In the first instance take impressions in soft wax or plaster of Paris of both jaws, the fractured one being in its abnormal position. Cast the models. Now saw through the line corresponding to the fracture, and place the pieces in the position they ought to be in if the jaw had been uninjured. Having articulated the models of the Upper and Lower jaws, unite the divided portions with plaster. A metal or vulcanite

plate is now made to the model representing the fractured jaw, capping three or four teeth on each side of the injury. The cap is now lined with warm Gutta-percha, and inserted in the mouth, being carefully held until the Gutta-percha is cold.

An appliance frequently used is that known as Gunning's Interdental Splint. This splint is especially effective in cases where more than one vertical fracture of the body exists. It is generally made of Vulcanite, and consists of an interdental splint for each jaw, constructed in one piece. The impressions of the Upper and Lower jaws are taken in the usual way, but great care must be exercised to obtain the correct articulation. Vulcanite shields are then made to fit both jaws; these are vulcanized together in such a manner, that when applied the jaws will be kept a short distance apart. By having two plates, the sound jaw assists in holding the injured one in position. Both plates should be freely perforated to allow for the discharge of pus.

This splint may be kept in position by means of fine screws passing between the roots of the teeth, but usually a four-tailed bandage suffices. Concerning the last two methods used in the treatment of fracture, namely ligature of the teeth, and wiring of the bony fragments, I have little to say. The former method has been frequently employed, but has generally proved unsatisfactory, on account of the teeth becoming loosened, and irritation of the gums being produced. The latter method has proved very successful in many cases, and has many advocates, but I think it rather comes under the province of the General Surgeon, than that of the Dental, consequently I will be satisfied with its mere mention. The various complications which may arise as the result of fractures of the Maxillæ, must be treated on ordinary surgical principles.

There are several more or less important methods of treatment which I have not mentioned, but I hope that one or the other of the various appliances enumerated will include any case of fracture of the maxilla which you may be called upon to treat.

A NOTE ON CAPPING A TOOTH PULP.

By C. R. TAYLOR, D.D.S., Streator, Ill.

It is often troublesome to cap a pulp with oxyphosphate of zinc on account of that material sticking to the instrument used to convey it to the parts desired to be covered without spreading it over the whole of the cavity. By the use of the following method the troublesome part can be avoided.

Take a piece of clean writing paper of the proper size and on the paper place a sufficient quantity of the cement, soft or hard, as the case requires ; having taken hold of the corner of the paper with the pliers before the cement was placed on the paper, carry the paper and cement to the parts to be capped, pass a burnishing instrument against the paper and burnish the capping to its place. If it is desired to get the benefit of the sticking qualities of the cement to assist in holding the filling in the cavity, put cement on both sides of the paper, before placing it in place.

The same method can be used with the paper and chloro-percha.

Not only does the paper act as a convenient carrier, but it is a splendid non-conductor. Superior to almost everything used for that purpose.

Southern Dental Journal.

British Journal of Dental Science.

LONDON, NOV. 2, 1896.

THE DENTAL CONGRESS AT NANCY.

Perhaps it may not be out of place to see what our dental brethren in France are doing, and to learn how dentistry is progressing across the channel. The French dentists held their second National Dental Congress at Nancy this summer, the first being held at Bordeaux last year. It is gratifying to our national pride to know that when one of our Congresses was held at Brighton, some years ago, two French delegates attended to see our methods and to learn how to form a Congress in their own country on similar lines. Those gentlemen were M. Charles Godon, the director of the French journal *L'Odontologie*, and the late M. Paul Dubois, the chief worker in the movement, whose sad death from a bicycle accident was recently recorded in these pages. In spite of the abstention of a considerable number of dentists the Congress mustered some one hundred and twenty members who seem to have had a very good time, the more serious work of papers and demonstrations being broken by the lighter duties of dinners and "punches." The papers read at the meeting cover a wide field, as will be seen when we mention the following: The application of the galvanic battery in making dental plates; The use of the electro-cautery for drying pulp canals, Pyorrhœa Alveolaris; Root filling; Affections of the Maxilla; Failures in tooth grafting—would that we heard more about failures—Dental Surgery in the French Army; Regulation of Teeth; Mutilations of teeth, etc., amongst Savage tribes; Dental Caries in animals; Cements; Hæmorrhage; Microbes in Caries; Treatment of dead teeth, and Anæsthetics. The practical demonstrations included; Gold filling by de Trey with his Solila gold; Bromide of ethyl

anæsthesia : Electrical anæsthesia ; Cocaine anæsthesia ; Immediate treatment of dead teeth, etc. A pleasant feature of the Congress was the interchange of courteous telegrams between the Congress and the British Dental Association which was holding its meeting in London at the same time. These international courtesies do much to promote good feeling between different nations, and to assist the cause of Science and the welfare of humanity in which we have a common interest.

The French dentists like ourselves, are in a transition state. They, like ourselves in the past, had no examination to pass, and every man worked by himself, and kept his own secrets. Now, like ourselves, they have become a liberal profession, and are finding out that it is best for no man to live unto himself, but that true progress is made by each helping the other. They, like us, have their dentists registered as having been in practice before the Act of 1892 *dentiste patenté*, they have their dentists who have undergone a curriculum corresponding to our L.D.S., *dentiste diplômé*, and they have their medical practitioners who practise dentistry by virtue of their medical qualification. They too, like us, have those who evade the law by practising without being registered, and who seem to be fined, when brought to justice, about £6 including costs. With us it seems to be the law, that anyone however unskilled may administer anæsthetics, as witness the late case at Leeds, but in France the *dentiste patenté* can only administer local anæsthetics by freezing, or by topical applications, while some of the *dentistes diplômés* would deprive him of the title of *surgeon-dentist*. These are, however, in the minority, and have to be content with describing themselves "of the Faculty of Medicine of Paris."

There are other signs which show that they, like ourselves, do not think alike on all points of Dental politics. For instance, there is a close association of surgeon-dentists which only admits members holding a diploma ; besides this there are two other associations in Paris which are open to all registered practitioners whether holding a diploma or

not, the only condition of membership being that they conduct their practice in a professional manner. Not content with this, a new association is being formed by those in practice before the Act. If progress goes hand in hand with union, we fancy that its march will not be made more rapid by these various splits. However, perhaps a little healthy rivalry is not always a bad thing, and competition helps to stimulate bodies which perhaps would grow lethargic without it. We wish our French colleagues all success, and perhaps when their great International Congress takes place in 1900, we may be able to visit them and receive, and perhaps impart, some of that knowledge which we hold in trust for our fellows.

THE PHYSIOLOGY OF NERVE.—Dr. Augustus Waller, F.R.S., who gave the opening address at the Medical Society of University College, took as his subject "A New Chapter in the Physiology of Nerve." He pointed out that hitherto in investigating the results of stimuli applied to a nerve, the answer was an indirect one transmitted through muscle or some other tissue. It had seemed to him better to put the question "How do you do?" directly to the nerve itself, and get a direct answer. For this purpose the nerve connected with electrodes is placed in a glass "gas-chamber," and the results of a succession of stimuli at minute intervals can be shown graphically as normal replies. On introducing certain vapours, as Chloroform or Ether, into the chamber the effect upon the Nerve is easily seen, and the same holds good when the Nerve is bathed, say for one minute, in a solution of different salts. A series of lantern slides demonstrated very well some of the results Dr. Waller has obtained with such tests. Thus it appeared that whilst Ether only anæsthetised the Nerve and normal responses were afterwards resumed, in the case of Chloroform the Nerve was killed. The action of K.Br (showing that K was the important element) Cocain, Croton Chloral, and Carbonic Acid, was also demonstrated.

THE SOCIETY OF ANÆSTHETISTS.—This Society, which has largely increased in numbers since its foundation, had a most enjoyable reunion on the occasion of its Annual Dinner, which took place at Limmer's Hotel, on the 15th of October. Mr. Bailey, that veteran anæsthetist, worthily occupied the chair, and was ably supported by his brother and sister anæsthetists, there being no less than three of the latter present. Perhaps the most interesting speech of the evening was that made by Mr. Tom Smith, who gave some of his early experiences. When he was dresser to Mr. (now Sir James) Paget, he used to administer chloroform for his master in the most lighthearted way, being only at the tender age of seventeen at the time. He remembered the time, in the early days of chloroform, when the drug used to be administered in drawing-rooms as an amusement. London then only boasted one anæsthetist, Dr. Snow; and he, although he attended Royalty and the best families, never earned more than £1000 per annum. His successor, Dr. Clover, is said to have made seven times that amount, whilst now-a-days the amount of fees paid in London alone for anæsthetics must be very large.

A VEGETARIAN ON TEETH.—A correspondent in a letter to the *Vegetarian* affirms that sweet food, fried food, or too much food are the causes of toothache. Another vegetarian in reply states that the danger is in the temperature of the food. Hot drinks and hot foods crack the enamel and afford lodgment for spores of caries. We have yet to learn that hot drinks are able to crack enamel, and it is news to us that caries is provided with spores. Our vegetarian poses as an authority on teeth because his own are nearly all false, and each false tooth "represents many days of pain, one or more unsuccessful stoppings and final extraction." If he had tried the stopping before the pain he might have been better off. However, he has found out how to keep the teeth he has in health; it is by using nuts as a diet. "Meat is not adapted for human teeth, as the use of toothpicks proves;

no one wants a toothpick after bread or pea-nuts." We are inclined to say with the late Lord Derby, "If this is the remedy we prefer the disease."

THE JUBILEE OF CHLOROFORM.—The Society of Anæsthetists,—by the way, is it anæsthetists or anæsthetists?—hopes to celebrate the fiftieth year of the use of chloroform in a fitting manner next year. It is proposed that papers by those having special knowledge shall be read, and that everything of special interest, either past or present, bearing upon the subject, shall be brought in evidence. We are not a demonstrative nation, as is evidenced by our allowing the Jenner centenary to slip by almost un-noticed, but we are glad to see that steps are being taken to commemorate the jubilee of one of the greatest blessings ever vouchsafed to mankind.

DELAYED DENTITION AND RICKETS.—Dr. Angel Money in a letter to the *Australasian Medical Gazette* strongly asserts his opinion that rickets is not so prevalent in Australia as in London, and furthermore that where it is present, it occurs in a milder form and with less deformity. Nevertheless it occurs plentifully enough, and while not contending that rickets is the only cause of delayed dentition, Dr. Money thinks it has much to answer for in that respect. The conclusions arrived at by Dr. Carpenter and Mr. Denison Pedley already published in a former issue of this JOURNAL entirely coincide with Dr. Money's experience.

WHO MADE THE FIRST SUCTION PLATE?—According to Dr. Trueman of Philadelphia, the suction principle for the retention of artificial dentures was discovered by Dr. James Gardett of Philadelphia, in 1800, and thereafter was frequently used by him. It would seem, however, that its general adoption dates from the advent of vulcanite, which made a very accurate fit possible.

THE ARMY EXAMINATION AND TEETH.—*Truth* calls attention this week to a case which seems to us a particularly cruel piece of red-tapeism. A youth had passed his examination for the Army but was referred by the Medical officer because his height and chest measurement were not up to the standard. Nothing daunted, the youth after a stiff course of gymnastics re-appeared, and to his joy found that his bulk had increased sufficiently in the desired directions to allow of his being passed on this score. His joy did not last long however, for upon his mouth being examined, it was found that he did not possess the standard number of teeth. He was therefore referred once more. Now, as *Truth* points out, if there is one organ more than another in which art can be made to come to the relief of Nature it is teeth. They would not interfere with an officer giving his words of command, or in any other way militate against his usefulness in the field or his service to his country, while the question of expense which might prevent a private soldier possessing a mechanical appliance, surely would not weigh with a man in the position of an officer. We hope the matter will not be allowed to drop.

THIRD SET OF TEETH.—The paragraph concerning a third set of teeth appears as regularly in the lay press as the notice concerning our old friend the sea-serpent. We are far from saying that third sets of teeth and sea-serpents do not exist, but their existence has yet to be proved on a satisfactory scientific basis. Scientists tell us that there may be a pre-dentition and also a post-dentition, but as yet they seem to have eluded the observation of those best fitted to form an opinion on the subject.

REGULATION APPLIANCES AND NERVOUS STRAIN.—A writer in the *Dental Review* desires "to call attention to the importance of guarding carefully against the use of painful appli-

ances, so frequently employed in orthodontic practice for young women and girls who are approaching the important if not critical period of puberty. Correcting irregularities of the teeth should not be a very painful operation, if skilful appliances are employed, but the continual pressure necessary to accomplish the work is liable to cause considerable annoyance to the young patient, and is sometimes quite taxing on the nervous system." We consider that cases where the wearing of a regulation appliance produces anything like a strain upon the nervous system must be extremely rare, if proper methods are employed.

TOOTHPICKS prepared by nature are a product of Spain and Mexico. *Ammi visnaga*, an umbelliferous plant, is called the "toothpick bishop-weed" on account of the use made in Spain of the rays or stalks of the main umbel. These, after flowering, shrink, and become so hard that they form convenient toothpicks. After they have fulfilled this purpose they are chewed, and are supposed to be of service in strengthening the gums. The spines of *Echinocactus visnaga* are in common use among the Mexicans for the same purpose. The number of these spines upon a single plant is something enormous. A comparatively small plant in Kew Gardens was estimated to have 17,600, and a large specimen in the same place could not have fewer than 51,000.

So eminent an authority as Dr. Miller, who knows all about the heathen microbes and can bring the antiseptic batteries to bear, says the chief point in pulp-canal treatment is a thorough mechanical cleansing.

I do not favour the idea held so largely in many quarters that every tooth should be saved and that every root may wear a crown. The sentiment is quite absurd. It is neither according to law nor gospel. The best antiseptic for a large class of derelicts, whose condition I will not stop now to describe, is not carbolic acid, or even mercuric chlorid, but a well adapted pair of forceps skilfully applied.

Dr. C. C. Barker.

Abstracts of British & Foreign Journals.

AIR-CHAMBERS.

Dr. L. P. HASKELL, Chicago.

Writers still continue to assert the necessity for, and describe the methods of, making air-chambers in full dentures. It seems as though an experience of fifty years, exclusively in prosthetic dentistry, dating back to the first "suction" plates, ought to demonstrate whether air-chambers are a necessity in full dentures.

My preceptor, Dr. Hanson, of Boston, so far as I know, made the first suction plate, I think in the year 1844. The impression was taken in common beeswax; the die made of tin, and the plate fitted to the entire palate. The adhesion was such that he tested its force by soldering a hook to the plate, attached a wire to it, and to this suspended a pail of water, and piling other weights on it, the patient lifted and held the whole. All plates were thus made without air-chambers, which were not introduced till several years later, and were known as the "Gilbert" air-chamber, the same as now used.

For more than twenty-five years I have discarded the air-chambers in the full denture as unnecessary, and often very detrimental, in rubber, gold, aluminium, and the heavy continuous-gum work, in flat cases, high arches, ridges hard or soft, and no ridge at all. On my shelves are hundreds of models of every conceivable shape and condition, on which dentures have been made, and all working successfully, and yet not an air-chamber in one of them.

There is one fact in connection with the upper jaw that seems to be largely overlooked. The centre of the palate in 99 per cent. of cases is hard, and is the only portion of the jaw which never changes or yields to pressure. As the alveolus gives way, the plate will rest there and rock, and interfere seriously with its adhesion and stability. In metal plates I make a "relief" by covering the hard centre with a thin film of wax, chamfering the margins to a thin edge, or flush with the model.

Now, if there be an air-chamber, its anterior and posterior margins must, of necessity, rest on this hard centre, and in the course of time the plate is rocking and the air-chamber is worse than useless.

There is a small per cent. of cases where the centre of the palate is soft, and there is usually a slight crevice. In such cases I make no change at all, but fit the plate closely to the entire surface, making sure that its margin fits snugly into the crevice. On trying the plate in the mouth I do not ask the patient to "suck it up," but am confident that the adhesion will be all right if I see no air-bubbles escape at the rear when pressing the plate with the finger in the centre, having previously wetted the palatal surface; and this, too, in view of the extra expense involved in making-over a continuous-gum set, if the adhesion is not sufficient.

I find many dentists have discarded air-chambers and other appliances for suction; and they are satisfied with the results. These unsightly objects in a metal plate and the unnecessary thickening of a continuous-gum denture can be entirely dispensed with. In rubber sets I bur with the large cone bur a portion of the rubber from the palatal surface.

In the worst case for which I have made a denture in a practice of fifty years, I have no air-chamber. On the right side a portion of the bone was removed on account of disease. The remainder of the ridge is thickened flexible membrane; the centre of the palate is enlarged, quite prominent. I raised the model slightly over the right side where it is hard; raised it as usual over the hard centre, swaged an aluminum plate, and attached the teeth with rubber. The denture is one inch long in front to restore contour of face. The only favourable condition of the mouth is the retention of all the lower teeth. The patient told me after wearing the plate eighteen months he often forgot he was wearing artificial teeth. Had previously seven sets made by different dentists, none of which had been satisfactory. If an air-chamber is not needed in such a case, where is it a necessity?

Cosmos.

SURGERY OF THE MAXILLARY SINUS.

By Dr. J. D. PATTERSON.

On account of contiguity of the sinus to the superior molar roots, disease of these latter often extends to the antrum. Diseases of these teeth are too often treated without investigating the antrum, especially in obstinate and chronic cases.

The treatment of diseases of this cavity has not been properly taught, so that the ordinary practitioner is not at all skilled in their diagnosis. The utmost skill is often demanded in making a correct diagnosis. The symptoms are often obscure and deceptive. When from a diseased tooth the diagnosis is often simple, but from other causes is more obscure. When the teeth are not affected, the symptoms are often similar to, and are often mistaken for, a severe coryza. The teeth do not respond, and there is no redness or swelling. The most ordinary and evident signs are not present. Sometimes an electric lamp in the mouth will show through the antrum and cheek, but even the translucency cannot be depended upon. The new X rays may prove valuable in diagnosing diseases of this kind. When the usual symptoms are present,—heat, swelling, distension, etc.,—and are plain, there is sufficient ground for operating. The diseased tooth should be extracted, and this alone will often effect a cure. When chronic, however, this will not be sufficient. The antrum must then be opened, and there has been much dispute as to the proper place for performing this operation. He has found that the best place generally is the lowest level of the space formed by the triangle of the three roots of the upper first molar. First sterilize your instruments in resorcin or cassia water. All instruments and surroundings must be aseptic. The engine makes such work much easier and more rapid nowadays. The trephine should be first used, with little pressure, as it will progress rapidly. When the cavity is reached, a flow of diseased matter will come. After this is well evacuated, follow with the larger instruments until you can insert the little finger and explore all parts of the cavity, and see as much of it as possible. Wash with antiseptic liquids and dress as may be necessary, with water at 100 deg. with a pinch of salt to allay pain, which it will do. Tumours and growths must be removed with curettes. These are difficult to treat, but can be removed successfully and a cure effected. It may be safely said that even malignant growths may be removed and a cure effected if taken soon enough. Complete bony walls isolate the growth, and a perfect cure can be attained by their removal if taken before the bone has become affected.

HOW GOODYEAR BECAME A RUBBER INVENTOR.

The ruinous failure of the earliest American rubber manufacturers arose from the fact that they began their costly operations in ignorance of the qualities of the material which they had to deal with. No one had discovered any process by which India rubber once dissolved could be restored to its original consistency, and the importance of this item was overlooked till many men had been ruined.

It was in the year 1820 that a pair of India rubber shoes was seen for the first time in the United States. They were covered with gilding, and resembled in shape the shoes of a Chinaman. They were handed about in Boston only as a curiosity. Two or three years after, a ship from South America brought to Boston 500 pairs of shoes, thick, heavy and ill-shaped, which sold so readily as to invite further importations. The business increased till the annual importation reached half a million pairs, and India rubber shoes had become an article of general use.

The manner in which these shoes were made by the natives of South America was frequently described in the newspapers, and seemed to present no difficulty. They were made much as farmers' wives made candles. The sap being collected from the trees, clay lasts were dipped into the liquid twenty or thirty times, each layer being smoked a little. The shoes were then hung up to harden for a few days; after which the clay was removed, and the shoes were stored for some months to harden them still more.

Nothing was more natural than to suppose that Yankees could do this as well as Indians, if not far better. The raw India rubber could then be bought in Boston for five cents a pound, and a pair of shoes made of it brought from three to five dollars. Surely here was a promising basis for a new branch of manufacture in New England. It happened, too, in 1830, that vast quantities of the raw gum reached the United States. It came covered with hides, in masses, of which no use could be made in America; and it remained unsold, or was sent to Europe.

Patent leather suggested the first American attempt to turn India rubber to account. Mr. E. M. Chaffee, foreman of a patent leather factory, conceived the idea, in 1830, of spreading India rubber on cloth, hoping to produce an article

which should possess the good qualities of patent leather, with the additional one of being waterproof. In the deepest secrecy he experimented for several months. By dissolving a pound of India rubber in three quarts of spirits of turpentine, and adding lampblack enough to give it the desired colour, he produced a composition which he supposed would perfectly answer the purpose,

He invented a machine for spreading it, and made some specimens of cloth, which had every appearance of being a very useful article. The surface, after being dried in the sun, was firm and smooth ; and Mr. Chaffee supposed, and his friends agreed with him, that he had made an invention of the utmost value. At this point he invited a few solid men of Roxbury, Mass., to look at his specimens and listen to his statements. He convinced them. The result of the conference was the Roxbury India Rubber Company, incorporated in February, 1833, with a capital of 30,000 dollars.

The progress of this company was amazing. Within a year its capital was increased to 240,000 dollars. Before another year had expired, this was increased to 300,000 dollars. The company manufactured the cloth invented by Mr. Chaffee, and many articles were made of that cloth, such as coats, caps, wagon curtains and coverings. Shoes made without fibre were soon introduced. Nothing could be better than the appearance of these articles when they were new. They were in the highest favour, and were sold more rapidly than the company could manufacture them.

The astonishing prosperity of the Roxbury Company had its natural effect in calling into existence similar establishments in other towns. Manufactories were started at Boston, Framlingham, Salem, Lynn, Chelsea, Troy, and Staten Island, with capitals ranging from 100,000 to 500,000 dols. ; and all of them appeared to prosper. There was an India rubber mania in those years similar to that of petroleum in 1864. Not to invest in India rubber stock was regarded by some shrewd men as indicative of inferior business talents and general dulness of comprehension.

The exterior facts were certainly well calculated to lure even the most wary. Here was material worth only a few cents a pound, out of which shoes were quickly made, which brought 2 dollars a pair ! It was a plain case. Besides, there were the India rubber companies, all working to their extreme capacity, and selling all they could make. Such were the conditions of the trade when Charles Goodyear

visited the New York office of the Roxbury Rubber Company to suggest some improvements in inflating a life preserver manufactured by the company. To his surprise the agent took him into his confidence and explained that the prosperity of all the India rubber companies in the United States was only apparent ; that they needed an ingenious inventor to save them all from ruin.

The Roxbury Company had manufactured vast quantities of shoes and fabrics in the cool months of 1833 and 1834, which had readily been sold at high prices ; but during the following summer, the greater part of them had melted. Twenty thousand dollars' worth had been returned, reduced to the consistency of common gum, and emitting an odour so offensive that they had been obliged to bury it. New ingredients had been employed, new machinery applied, but still the articles would dissolve. In some cases, shoes had borne the heat of one summer and melted the next. The wagon covers became sticky in the sun and rigid in the cold.

The directors were at their wits' end ; since it required two years to test a new process, and meanwhile they knew not whether the articles made by it were valuable or worthless. If they stopped manufacturing, that was certain ruin. If they went on, they might find the product of a whole winter dissolving on their hands. The capital of the company was already so far exhausted that, unless the true method were speedily discovered, it would be compelled to wind up its affairs.

The agent urged Mr. Goodyear not to waste time on minor improvements, but to direct all his efforts to finding out the secret of successfully working the material itself. The company could not buy his improved inflator ; but let them learn how to make an India rubber shoe that would stand the summer's heat, and there was scarcely any price which it would not gladly give for the secret.

The worst apprehensions of the directors of this company were realized. The public soon became tired of buying India rubber shoes that could only be saved during the summer by putting them into a refrigerator. In the third year of the mania India rubber stock began to decline, and Roxbury itself finally fell to 2.50 dols. Before the close of 1836, all the companies had ceased to exist, their fall involving many hundreds of families in heavy loss. The clumsy, shapeless shoes from South America were the only ones the people would buy. It was generally supposed that the secret of

their resisting heat was that they were smoked with the leaves of a certain tree peculiar to South America, and that nothing else in nature would answer the purpose.

The 2,000,000 lost by these companies had one result which has proved to be many times that sum ; it led Charles Goodyear to undertake the investigation of Indian rubber. That chance conversation with the agent of the Roxbury Company fixed his destiny.

Commercial Bulletin.

DURATION OF PULPLESS TEETH.

By Dr. TAFT, of Cincinnati, Ohio.

The tooth derives its nutritive supply from the pulp, and it goes on from its primary condition to its perfection (speaking of the permanent teeth), but what about it after this period ? Is it of any value after the perfection of the tooth ? Were it not of value in the economy, Nature would have made provision for its removal. Does the tooth need nutrition after twenty-five years of age, after it has been entirely calcified ? Can any one decide in any given case when the period of perfect calcification is reached ? It is reached much earlier in some cases than in others. It is a fact patent to every close observer that the teeth in many instances do not seem to be complete in calcification at thirty or thirty-five years of age. How do we know ? Up to this time they have remained in a comparatively deficient condition in this respect. They become more and more dense after this time. Does that increased solidification take place after the pulp is destroyed ? Never. What are the constituents of dentine and enamel ? Two general classes, organic and inorganic, vital and non-vital, the vital just as important an element as the non-vital. The vital must have supply and nutrition. When its life is taken away, deterioration at once begins, not in the broad sense manifesting disintegration at once, though that comes afterward. The organic portion of the tooth is not nourished as when the pulp is living. Both the dentine and enamel receive their supply from the pulp of the tooth, and when this organ is destroyed this process of nutrition is

also destroyed. It will be found that after a pulp is taken away, disintegration and breaking down of the tooth takes place without the ordinary process of decay, simply by a deterioration of the tooth-structure. That, of course, appears on the organic material, and not the inorganic. Often we find a devitalized tooth with a portion of it broken off. The enamel far more readily breaks down, and disintegration occurs wherever a thin edge is left, or where there is an exposed edge or border, because of its weakened condition. That is true also of the dentine, because that has within it a much larger proportion of organic matter. I remember the case of an excellent tooth in a mouth in which all the teeth were excellent, except that the first permanent molar by decay had lost its pulp. There was a large cavity running through from front to back. On that tooth Dr. Atkinson many years ago performed an operation, filling up the pulp chamber and building up the tooth. The statement was made that the tooth would last the lifetime of the patient, but it did not. It was a firm, solid tooth, as was its neighbours. That tooth lasted about eighteen years, and did good service, except that about twelve or thirteen years after it had been filled the edges of the enamel began to break away, and about eighteen years after it was filled the whole inner wall broke away. Examination revealed the fact that there was no ordinary decay. It was very slightly decalcified, but there had been such deterioration of the organic portion of the tooth that it was not able to withstand the force that was put on it in mastication and gave way. Within a year the other side broke off in the same manner, showing clearly that there was a deterioration of the structure or character of the tooth that was fatal to it.

International.

TARTAR ON CHILDRENS' TEETH.

By Dr. ENGS, California.

A form of tartar, hard and sharp, collects in small granules, just under the free margin of the gum. It is sometimes invisible, and by one unfamiliar with its nature would be passed unobserved. It is so irritating to the gums that they

become congested and bleed at the touch of a tooth brush. Some take this as an excuse for not using one, and thus add to the trouble. If we place a piece of blue litmus paper under the gums, we will find that generally the secretions are slightly acid. To this acid we attribute largely that form of decay so often found at the cervical border of the teeth, the first indication of which is a white line of disorganized enamel. In the early stages of this disease, free use of a soft tooth-brush and chalk is useful, the superficial decay and tartar having first been removed. We recommend in addition to this, some alkaline wash, preferably the aromatic spirits of ammonia with alcohol, to be used on a wet tooth-brush after using the chalk. The powder will polish the eroded surface of the enamel, and with the wash, counteract the tendency to acidity.

Dr. W. Xavia Sudduth calls attention in a recent issue of the *Items*, to the well being of children in California, and lays special stress on the good condition of their teeth. We regret to say that we have not found sound, resistant teeth in this locality, though conditions may be more favourable in other sections of the State. White decay is ever present here. This escapes the parents' eye, and unless regular visits are made to a dentist, much damage results.

Only the other day we examined the mouth of a little girl for the first time, where not a speck of decay was anywhere to be seen, and yet the molars were badly attacked by this white decay. Something here acts disastrously on the teeth of the younger generation. Many of the local dentists say "it is the water." This seems improbable, for the water in this locality is charged heavily with lime, which should make it rather beneficial than injurious to the teeth. The large consumption of fruit would seem a more likely reason. At times we think the nervous tension under which many of the people live has much to do with it. A remedy would seem to be the more extended use of oxyphosphate of zinc as a filling for children's teeth. This will necessitate great courage on the part of dentists, that they may brave the prejudice existing against this material. Dentists will have to have more consideration for the future of their patients' teeth than for the immediate lining of their own pockets, and their patients must have a proper appreciation of their services as scientific men.

CHLOROFORM ANÆSTHESIA DANGEROUS TO MEAT EATERS.

Some time ago Dr. Lauder Brunton called attention to the fact that death from chloroform anæsthesia is probably due, not to the chloroform itself, but to the fact that chloroform arrests the elimination of tissue poisons, and that death is directly the result of the action of these poisons rather than of the chloroform. Dr. Brunton cited the fact that death from chloroform anæsthesia is very rare in India, while it is becoming more and more common in England, which fact he attributes to the increasing use of meat as an article of diet in Great Britain.

Chloroform has long been a popular anæsthetic in Edinburgh, but recently deaths from its use in that city have been very frequent. It is also noticed that gout is becoming very common. Both these circumstances are doubtless due to the increased consumption of meat resulting from the large importation of low-priced refrigerator meat.

Modern Medicine.

A DEAD TOOTH.

By Dr. TRUMAN.

My experience in thirty-three or more years of practice is that the moment the pulp is destroyed the tooth is limited in regard to its duration ; and also by observation I know that when the pulp is allowed to remain, as long as that tooth exists it will endure, for I have seen them worn down to the gums. The Almighty would not have placed us in such a position that after a certain period of time an organ that was built up should be destroyed before the period of our demise. He certainly intended that those teeth should last us as long as we lived, and we have plenty of people who have their teeth in good condition till they die. In pyorrhea, I cannot see where condition of the pulp has any effect on the disease. If so, why do you find caries in mouths where only one tooth is affected and no others? Extract that tooth, and ten chances to one not another will be affected. This has occurred to me

in my own practice. If the pulp really were the cause of or would induce this condition, everybody would be affected with pyorrhea. Do you find that to be the case? Of course not. You find those lesions in the human body where one man may be affected with a something, but it does not follow that the whole human race is affected. Where you have the pulp irritated, the usual trouble is the reflex condition of the pericementum. If the congestion remains in the pulp, pus is formed and the pulp is annihilated. There is no such thing in the pulp as an absorbent. There is a period of disease. When senile decay steps in, as Dr. Atkinson said, it is want of proper nourishment, and those conditions then follow.

I think all the evidence we have had in the past shows that there is an increasing density of the teeth up to the time that they are lost in advanced years, and that there never comes a time when there is resorption. This has been demonstrated recently by experiment. It has been theoretical heretofore. If I understood Dr. Black's series of papers in the *Dental Cosmos*, there is a gradual increase up to old age. I know from my own observation, microscopically and otherwise, that there is an increase in density in the structure of the tooth, but I know of no time when there is a resorption. Though there is at times a pathological condition apparent where the pulp destroys the tissue.

Items of Interest.

SERUM-THERAPY OF CANCER.

At the recent French Congress of International Medicine (*Sem. Med.*, August 19th) Dubois reported some experiments which he had made on the transmission of human cancer to animals, by inoculating fragments of cancerous material in the cellular tissue. In this way he succeeded in producing several tumours, the largest of which weighed about 1 lb. 5oz. Three cases of cancer in the human subject were treated with serum from inoculated animals. The first was one of non-ulcerated cancer of the breast; "an almost complete cure was effected after forty-five days' treatment," the tumour becoming atrophied, and being transformed into a small fibrous nodule. The second case was one of epithelioma of the fore-

head. This shrank and almost disappeared in thirty-five days. In both these cases, from 2 to 5 c.cm. of serum were injected in the neighbourhood of the growth every three days; a few drops of slightly iodised alcohol were also injected into the substance of the tumour and at its edge. The third case was one of recurrent epithelioma of the upper lip, ulcerated and fungating; after twenty-three days of serum treatment the progress of the tumour seemed to be arrested, but there was no tendency to cure. The author states that the serum appears to bring about a cure by producing fibrous transformation. Its action is the more certain the earlier it is injected. The use of the serum does not seem to be attended with any danger except in the case of very extensive lesions. In discussing the communication, Bard expressed the opinion that Dubois, like other experimenters, had produced only purely inflammatory growths by the inoculation of cancerous material. He pointed out that the effect of the serum was somewhat discounted by the simultaneous use of iodised alcohol, but he admitted that serum injected into or near malignant growths caused a local inflammation which was sometimes beneficial. The serum treatment of cancer must at present be regarded with every possible reserve.

British Medical Journal.

THE POISON OF THE PLATYPUS.

Drs. Martin and Tidswell, of the Sydney University, have been making some investigations into the poison contained in the femoral gland and spur of the *ornithorhynchus paradoxus*. From a paper written by these gentlemen on the subject, we glean the following:—"The glands are situated one on each side in the gluteal region: they are comparatively large, and communicate with a canal in the spur by a duct which runs down the leg. 'Striking' is probably effected by the action of the powerful *gluteus maximus* muscle. The exact mechanism brought into play in the injection of the secretion is not determined, but is, no doubt, aided by a layer of involuntary muscle found in the capsule. Native tradition, and some recorded cases of the effects following on wounds by the spur, support the idea that the apparatus constitutes a powerful weapon of offence. The symptoms which have

been observed in man are almost immediate swelling, oedema spreading from the part stung, drowsiness, cold sweats, and vomiting, followed by marked depression. The illness produced generally necessitates some days in bed, whilst the local effect may only disappear after some weeks. No fatal effects in man have been recorded, but several dogs have been killed by the poison. The same train of symptoms has been observed in all the recorded cases. The effects are different from those following ordinary septic wounds from claws of animals, and suppuration of the spur wounds has not been noticed. The effects of platypus wounds is therefore specific, and presents analogies to that of snake-bite. Chemical investigations of the secretion showed that it was a solution of proteids."

Pharmaceutical Journal of Australasia.

TOOTH BLEACHING.

By D. HINMAN.

You are all, of course, very careful to remove all the decomposed tissue from the pulp-chamber and from the root-canal, but do you always remember these pockets (indicating the horns of the pulp), dipping down toward the cutting edge of the tooth? Unless they are thoroughly cleansed and filled, discolouration will return in spite of all your success in bleaching the tooth. Before undertaking to bleach the tooth, after all decomposed tissue has been removed, the root canal must be well filled a certain distance down from the apex, preferably with oxide of zinc and aristol (equal parts), and a little oil of cassia. The tooth is then to be bleached with pyrozone, heating and drying the tooth between each application. The 25 per cent. ethereal solution is used, applied on a pellet of cotton to saturation, the surrounding tissues being protected by the rubber dam. The cavity is temporarily filled with gutta-percha, and, if necessary, the pyrozone application repeated the next day. When the tubuli have thus been bleached, and the tooth dehydrated, a chloroform solution of clear, transparent gum-mastic is applied to the walls of the cavity and the unfilled portion of the root-

canal. The open tubuli take it up, and it hardens immediately, forming a white, transparent cavity-lining, and preventing any subsequent discolouration. Cement is then inserted against the cavity-walls, and the cavity filled.

Dental Register.

HOW TO STERILIZE COTTON.

A rather ingenious plan for sterilizing cotton is referred to in a French contemporary. A piece of cotton is taken, twisted on a stick or a piece of wood, and dipped into a saturated alcoholic solution of boracic acid for a moment or so. It is then withdrawn from the solution, and a light is applied to it, as the result of which the alcohol burns out, while the boracic acid prevents the cotton from burning. Five seconds are enough; as soon as the flame turns green it is extinguished. The cotton remains white, dry, warm, but absolutely sterilized.

Med. Press and Circular.

FRACTURE OF BOTH SUPERIOR MAXILLÆ.

Mr. Ernest Solly, M.B., F.R.C.S., writing to the *British Medical Journal* says:—

Mrs. S., of middle age, while riding comparatively slowly down a gentle incline, found on turning a corner that the road was almost blocked by a crowd of excursionists. In trying to steer her way through she turned against the curb or pavement, and in so doing fractured both superior maxillæ in such a way as to make the alveolar processes movable with distinct crepitus both as against each other, and also as against the rest of the facial bones; and from the ecchymosis along both infraorbital ridges, the line of fracture probably involved the walls of the antrum, including on the right side the infraorbital canal (as evidenced by the severe infraorbital neuralgia on that side). There was no external

wound, but there was at first free epistaxis and bleeding into the naso-pharynx showing extensive laceration of the mucous membrane. Fortunately there was no obvious displacement. The only special treatment ordered was that the complete set of artificial teeth (for upper jaw) should be worn constantly, as it was thought that the plate might help to keep the loose bones in position. Dr. Black who attended the patient, and asked me to see her with him, tells me that recovery was uninterrupted, and that there was no resulting deformity. I attribute the peculiar character of the accident to the slow pace at which the lady was riding, for as instead of being thrown forward she fell over, the hands never let go the handles, and the unprotected face received the direct blow.

ROOT-FILLING.

Dr. H. F. King, of Fremont, Neb., sent out two hundred teeth imbedded in plaster to various dentists, with the request that they fill them in their usual manner, and return them to him to be opened and examined and the results tabulated. The teeth were to be known by numbers, the names of operators to remain a secret. When the returned teeth had been examined, they were found to have been filled with chloro-percha, gutta-percha, oxychlorid, lead, tin, or copper points, shellac, wax, etc. One-eighth of an inch of each root was first sawed off, and if the apex was found well filled, it was placed in class 1; if through the apex, in class 2; if it did not reach the apex, in class 3; if drilled through and otherwise protruding material, in class 4. Out of one hundred and twenty-three teeth returned, forty-seven per cent. were well filled. In fifty-three per cent. the operator failed to reach the end of the root. The majority of the cases were of normal form, and some of the failures were due to accident. The most difficult cases were sometimes well filled.—*Cosmos*.

The choice between a lateral incisor and some tooth posterior to the cuspid depends on the position of the apex of the root of the cuspid, and also of the lateral.

If the apex of the root of the cuspid is so situated that the crown slants away from the median line, or will do so after being moved into its normal position, the extraction of one or both laterals is admissible.

Dental Review.

HINTS.

Dr J. R. Southworth, of Little Rock, Ark., uses the following as a local anæsthetic instead of cocain :

R. Chloroform,

Tr. aconite aa ʒiij

Tr. capsicum... .. ʒj

Tr. pyrethrum ʒss

Oil cloves ʒss

Pul. camphor ʒss

Met. fi. sol.

Directions.—Take a pledget of cotton large enough to envelope the tooth to be extracted, and the surrounding gum ; saturate it with the fluid and apply to tooth and gum, holding in contact—at the same time rubbing with thumb and finger—for about half a minute ; after a lapse of half a minute, apply again in the same manner. Then extract the tooth.

RESTORING TARNISHED GOLD.

According to the *Jewellers' Circular*, the following mixture is an excellent one for restoring gold which has become tarnished :—

Sodium Bicarbonate 20 oz.

Chlorinated Lime 1 oz.

Common Salt 1 oz.

Water 16 oz.

Mix well and apply with a soft brush. A very small quantity of the solution is sufficient for effecting the desired purpose, and it may be used either cold or lukewarm. Plain articles may be brightened equal to new by putting a spot or two of the liquid upon them from the stopper of the bottle and lightly brushing over the surface with fine tissue paper until sufficiently dried off to accomplish the object intended.

Pharmaceutical Journal.

“TAKEN WITH A GRAIN OF SALT.”—When a dentist says he always removes living or partially devitalized pulps, absolutely without pain—cures every case of “pyorrhea alveolaris” and is invariably successful in other difficult operations, his asseverations can always be “taken with a grain of salt.”

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

An ordinary meeting of this Society was held on Friday, October 9th, 1896. The President, T. G. Read, Esq., in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome was given to visitors. The following gentlemen were balloted for, and were unanimously elected : Messrs. Renton and Ybanez.

The following gentlemen were proposed as members of the Society to be balloted for at the next meeting :—Messrs. Chaundy, Huggins, Must, Dowling, Lawrance, and H. Rose.

Upon Casual Communications being called for, Mr. Loftus H. Canton showed some interesting teeth which were found in a cave at Seturitz, Basses Pyrénées. These teeth, supposed to be those of the Cave Bear, were found in a bed of guano, which was in some places thirty feet deep.

There were large quantities of animal remains, and one curious feature was that five specimens of human teeth were found in the same place together with human remains. Whether the human remains were contemporary with those of the animals, Mr. Canton could not say. The deep bed of guano was covered by a layer of stalagmite, varying between one to five inches in thickness, and above this another layer of guano was found, but not so deep as the lower layer. Finally at the top of all was another layer of Stalagmite. The fact of the remains being situated at such a great depth, seemed to imply that they were of great antiquity.

Mr. E. C. HALE JESSOP showed a model of the maxilla of a youth æt, 19. Both the deciduous canines were present, situated in the line of the arch anterior to the permanent canines. There were no bicuspid, and no history of there having been any deciduous molars. All the teeth present were regular with no interspaces. He also showed four lower molars with different degrees of separation into four roots.

Mr. STEVENSON showed an upper molar which had been extracted, the palatal root capped with gold, and a drainage tube passed through it, the cavity in the crown filled with

gold and then replanted. It was again extracted after five years because of irritation caused by absorption of the roots. This tooth is mentioned in Tomes' Dental Surgery (page 477) as an example of the failure of capping the end of a root, to prevent absorption.

He also showed a case of gemination of the right upper second molar and wisdom, and also a good specimen of absorption.

The Hon. Secretary brought forward two specimens of gemination of the upper second molar and wisdom for Mr. E. G. Carter. He also showed an upper second molar with the tuberosity attached, and a left lower canine with two distinct twisted roots.

The President then called upon Mr. L. H. Canton for his paper on "Fracture of Jaws," which is published on page 967.

An interesting discussion followed, in which the President, Messrs. Spokes, W. R. Read, Gudgeon and Jessop took part.

The President proposed a vote of thanks to Mr. Loftus H. Canton, and those gentlemen who had brought forward Casual Communications. This was carried unanimously, and the meeting terminated.

MANCHESTER ODONTOLOGICAL SOCIETY.

The Annual Meeting of the above Society was held at the Grand Hotel, Aytoun Street, on Tuesday evening, May 5th, 1896. Mr. W. Simms, President, in the chair.

NOMINATION OF MEMBERS.

The following gentlemen were nominated for membership :
—Mr. H. H. Coleman, L.D.S. Ed. ; Mr. T. W. F. Rowney, L.D.S. Eng.

RESOLUTION FROM THE COUNCIL.

Mr. D. HEADRIDGE (hon. sec.) read the following resolution from the Council :—

"The Council of the Society having had its attention called o the publication in the lay press, by some unauthorized

person, of a portion of its proceedings, desires to affirm its objection to such a course as being contrary to the custom and usage of professional societies, and in opposition to the spirit of its own bye-laws."

"The Council instructs its Secretaries to communicate the above resolution to the members, and to read it at the next meeting of the Society."

CASUAL COMMUNICATIONS.

Mr. E. P. COLLETT exhibited the model of the mouth of a child aged $5\frac{1}{2}$ years, showing protrusion caused by thumb-sucking.

Mr. T. MURPHY offered for inspection a model taken from a boy $11\frac{1}{2}$ years of age, in which only the six-year molars were present.

Mr. WHITTAKER answered a number of questions relating to the Gartrell furnacc, the cost of which, he said, was only £3, while a Downie furnace cost 14 guineas, and the larger size 25 guineas. He expressed a favourable opinion with regard to it, but mentioned that fusing took longer with it than with a Downie furnace.

AN IMPROVED GAS APPARATUS.

Mr. HOUGHTON shewed an improved apparatus for administering Nitrous Oxide Gas. He reminded the meeting that a month or two ago he had brought before their notice a modification of the gas apparatus usually used. His object in experimenting was, if possible, to get an apparatus automatic in its action, and one which they could put out of sight of the patient. In the apparatus he showed them previously he controlled the supply of gas by a low pressure regulator fixed on a cylinder which in practice did not work so satisfactorily as he would have liked. In the present apparatus the valve was opened by the action of the patient's inhaling, after the gas had been turned on at the cylinder. The gas could be delivered at pressure, if necessary, by turning a screw. Mr. Houghton showed the action of the apparatus in detail and invited a member to try it.

Mr. G. G. CAMPION, having inhaled the gas in the presence of the members, stated the results. He said there was slight sense of effort in the inhalation, but nothing objectionable. He thought Mr. Houghton's contrivance was one which might prove extremely useful. The sensation, speaking generally, was very pleasant, but he did not know that he

would be justified in saying that it was more pleasant than that of gas administered in the ordinary way.

Mr. HOUGHTON reminded the members that the gas could be delivered at pressure. He had been using a working model of the apparatus during the last two months with perfect satisfaction to himself and his patients. Mr. Houghton added that he had no pecuniary interest in the apparatus, and his only interest in the matter was to get the best instrument possible for the use of the profession.

The PRESIDENT expressed the indebtedness of the members to Mr. Houghton for his information, and said they would be glad at a future meeting to hear a report from him of his further experience with regard to it.

Mr. COLLETT read a paper on "The advisability of inserting Dentures immediately after extraction," which is published on p. 961.

DISCUSSION.

Mr. G. G. CAMPION, on the call of the President, said he would offer himself as a victim of criticism by succeeding speakers, because he had had no experience at all of this method of treatment, although he had heard it advocated some years ago. He remembered Mr. Macleod of Edinburgh, telling him that he constantly treated cases in this way, even going so far as to make his denture before the teeth were removed. He removed, in cases where necessary, six or eight teeth under chloroform, and put the denture in before the patient had recovered consciousness. He thought that was Mr. Macleod's description. If he had amplified it he was very sorry. He would like to ask Mr. Collett whether he used any particular teeth in these cases. Mr. Macleod he thought told him that after cutting off the teeth from the model he drilled sockets artificially into the plaster, and placed the teeth into these sockets. He said that there was very little discomfort to the patient, the healing progressed very well, although he did not allow the patient to remove the denture from the mouth for some days, and in spite of this the healing process went on very satisfactorily. Mr. Collett might perhaps add to what he had said by telling them his experience of the after effects of inserting dentures in this way. It was certainly a subject of interest, and if, as Mr. Collett said, the gums remained in practice in the same position as they were before the extraction, with very much less shrinkage, the method would be very useful in certain cases.

Mr. HOUGHTON said he had practised this method himself for some years, and found it very successful. There was less absorption took place, very little discomfort, and the patients were delighted with the results. He always took the impression before he took the teeth out, and made the artificial denture before he extracted the teeth. He had never had any difficulty and thought the method was one they might all practise with safety.

Mr. G. G. CAMPION further asked Mr. Collett to what extent he adopted this practice. Supposing he required to remove a number of foul stumps from the entire upper maxilla, would he use this method in the molar region as well as the incisor region?

Mr. F. W. MINSHALL said he had followed this method in some cases for a considerable time past. He was entirely on Mr. Collett's side, and believed this to be a very successful way. He found Ash's teeth the most suitable, because he liked to select teeth with necks that he could adapt to his purpose. With regard to Mr. Campion's last question, he might say that he would use this method in all cases where it was necessary to make the denture immediately; but if he had roots in the molar region, he would endeavour to persuade the patient to have those removed some months before the removal of the incisors.

Mr. WILLIAM HEADRIDGE certainly thought this a very interesting subject to introduce, but failed to see very much advantage in the method. If a person was desirous of having teeth inserted immediately, after the extraction of the roots, the more correct course he thought would be to take an impression, as it had been the custom for over 40 years to do, when it was imperative that they were to be made forthwith. He thought the better plan and the more sound system to adopt was to this, and then a practical man knew how to carve the model to receive the insertion of the artificial teeth. With regard to what had been said about this method preventing so much shrinkage, he was somewhat sceptical. He thought the mouth would go to its natural form whatever means they adopted.

The PRESIDENT said most of them, he imagined, had tried this plan from time to time. It might with advantage be used in any necessary additions to sets already worn, and the advantages of this method in such cases were great.

Mr. WILLIAM HEADRIDGE said that he would be pleased at

any future time if Mr. Collett could show him that by this method absorption had been delayed.

Mr. COLLETT, in replying on the discussion, reminded the members that he had not claimed anything original in connection with this method, because he knew a good many dentists had tried it from time to time, but he did not know that Mr. Macleod was one of the first. Mr. Campion told them that he always took his impression before he took the teeth out. He had tried that on several occasions and thought they got a much better and more workable impression by taking it immediately after the extraction, because if they had the impression material in a very soft condition and used it new, it would run some little distance into the sockets, and this gave them a very good guide in carving out the sockets in the plaster model. He agreed as to the advantage of using Ash's teeth, which they could cut and grind to suit each case. At the present moment the Dental Manufacturing Company were putting on the market some useful teeth with constricted necks which would be useful in such cases. Mr. Collett said he maintained that this method was most useful in partial cases and in dealing with young mouths. He thought it was a distinct advantage to delay the absorption, if they did delay it, but he only contended that they prevented the gum from falling into the socket by the insertion of the teeth. Mr. Dykes said he liked to take the impression beforehand. He did not think they got as good a model for their purpose if they did so. He had put in a set five years ago which was comfortable now and it still looked well.

The PRESIDENT conveyed the thanks of the Society to Mr. Collett for his interesting contribution.

ANNUAL REPORTS AND ACCOUNTS.

REPORT OF THE COUNCIL.

The report of the Council indicated the continued progress of the Society.

REPORT OF THE TREASURER.

The Hon. TREASURER (Mr. Henry Planck) presented the annual statement of accounts, which showed that the income for the year, including a balance of £35 11s. 7d. from last year, had been £93 0s. 11d. There was a balance in hand, after paying expenses, of £53 5s. 3d.

LIBRARIAN'S REPORT.

Mr. W. A. HOOTON gave a report of the operations of the Library for the past year. A copy of Hun-ter's work on the Teeth had been presented by Mr. D. Headridge.

On the motion of Mr. Collett, seconded by Mr. Dykes, the Reports and Balance Sheet were adopted.

ELECTION OF OFFICERS.

The PRESIDENT announced as a result of the Ballot that the following officers had been elected for the ensuing year :

President—Mr. G. G. Campion.

Vice-Presidents—Mr. W. Dykes and Mr. G. O. Whittaker.

Treasurer—Mr. H. Planck.

Librarian—Mr. W. A. Hooton. *(Society).*

Secretaries—Mr. D. Headridge *(Council)*, Mr. F. W. Masters

Members of the Council—Messrs. J. H. Jones, A. B. Wolfenden, F. W. Minshall, P. A. Linnell, E. P. Collett, E. Houghton.

VOTE OF THANKS.

Mr. MURPHY proposed a vote of thanks to the retiring officers for their service during the past year.

Mr. DYKES seconded the resolution, which was supported by Mr. W. Headridge, and adopted.

The PRESIDENT, in responding to the resolution expressed regret that Mr. Minshall, who had been one of the secretaries for 3 years had felt it necessary to resign, and said they all knew how much work he had done for the Society. They however, retained the services of Mr. David Headridge, who with Mr. Masters would vigorously carry on the secretarial work. For himself and his fellow officers he desired to thank the members for the generous support accorded to them during their term of office. It was now his pleasure to invite his successor, Mr. George G. Campion, to take the President's chair. His election to that office provided the only example the Society afforded of father and son occupying the President's office. He would receive the cordial welcome of all the members, not only on account of the interest he had ever taken in, and his labours for, the Society, but because of his scientific attainments, and his well-earned position in the dental world.

Mr. G. G. CAMPION, having taken the President's chair amidst applause, expressed his sense of the honour which had been done him that evening. Had he been at the Council

meeting when the subject of the new President came up he would have asked that his nomination to that office should be postponed for a time. There were, he felt, older and abler members of the Society who had certainly as much, and probably more, claim to that honourable post, but he had felt that he was not at liberty to lightly disregard the unanimous expression of the Council, and that the only thing he could do was to accept the office with a very deep and real sense of inadequacy and inability to perform fitly the duties of the office. He felt that still more coming immediately after Mr. Simms, who had been almost, he thought they would agree, an ideal chairman. He was grateful to him for his kind words, and thanked them very heartily for the honour done him.

This concluded the business of the meeting.

Dental News.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the sittings of the Dental Board in October the following candidates passed the first examination for the dental license :

William J. Crookes, Liverpool ; Hugh John Miller, Glasgow.

The following passed the final examination, and were admitted licentiates in dental surgery :

Henry Adams, Glasgow ; Oswald Armer, Bethesda, N. Wales ; Bertram Henry Davis, Greenock ; David Dunlop, Irvine ; Robert Smith Grant, Glasgow ; John William Vaughan, Birmingham ; John Barnes Watson, Glasgow.

It is reported that a valuable find of platinum has been discovered near Coolgardie, in Western Australia.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

A GRUMBLE AT THE DENTAL HOSPITALS.

Mr. Editor,—As a reader of your Journal of many years standing, I ask you to insert this letter. Eleven years ago, I started in practice for myself in the West end of London by the aid of the much abused showcase, and also an empty pocket. By dint of perseverance I was thankful to find myself in a position to do without this case, thenceforward abusing all such methods as I believe is usual in such cases. Soon I was even able to carry my practice into a quiet side street, and things looked favourable to an early removal to Harley Street at least. But alas, Mr. Editor, I had not reckoned with the Dental Hospitals, and now after all these years of quiet, respectable but contented practice, I find myself driven back into the ranks of the advertising fraternity. I will explain why. My practice being self-made, contained a goodly number of ladies' maids and other *well paid* servants, who now get suited with artificial dentures through the instrumentality of the Dental hospitals. Numbers of their mistresses are subscribers, and send them to the hospitals with letters under the impression that they will get cheaper and better treatment, thus taking up the hospitals' time that should be given to the really necessitous poor, and also greatly to the detriment of dentists who like myself have the misfortune to suffer a loss. If you will permit a little correspondence on this subject, I feel sure you will find I am not the only one hard hit by the hospitals. We have quite enough to bear from the Guinea set gentlemen, without the hospitals, who should protect all honest effort (whether L.D.S. or not) becoming our keenest competitors. How would "Artificial Teeth at Hospital Prices" sound? "Disgraceful!" would be the cry, I am sure, and rightly so; but this is an age of keen competition, and registered dentists will strive to keep pace with their rivals, no matter who they may be, and much as they may desire to respect professional etiquette. Believe me, there are many like myself trying to live honestly and respectably, but with the Guinea set and unregistered men on one side, and competition of the hospitals on the other, it is anything but a bed of roses for some of us.

REGISTERED DENTIST.

Dental Hospital Report.

WORK DONE at the Victoria Dental Hospital of Manchester,
during the month of SEPTEMBER, 1896.

| | |
|---|------|
| Number of Patients attended | 925 |
| <hr/> | |
| Number of Extractions | 629 |
| Number of Extractions under Anæsthetics | 184 |
| Gold Stoppings | 105 |
| Other Stoppings | 184 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 212 |
| Gold and Porcelain Crowns | 17 |
| Inlays | 1 |
| <hr/> | |
| Total | 1332 |
| <hr/> | |

ERNST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 692. LONDON, NOV. 16, 1896. VOL. XXXIX

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

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(Continued from page 772.)

Comparing plate work with the so-called removable bridge work, one cannot help being struck with the great similarity that exists between the two, especially when a very narrow plate is made; in fact, a narrow plate in three-fourths of the cases that one sees illustrated would, in the writer's opinion, have been much more satisfactory in every respect, both as regards mastication and the general welfare of the patient's mouth.

With a plate resting on the gum, one must own that greater power of mastication is obtained, and at the same time the strain on the remaining teeth is much lessened, while being able to remove it from the mouth with facility, for the purposes of cleanliness, renders it hygienically, more conducive to the health of the oral cavity.

If one takes the trouble to crown the teeth or roots and utilize them for clasping, for the retention of the case, one has the most simple form of work, and at the same time the most efficient that can be constructed.

As showing manipulative ability of a very high order, some of these bridges are conspicuous, but the conclusion arrived at, from the dreadful exhibitions that have come under the writer's notice, and under that of many of his brother practitioners, is that the foundations for these pieces of work, in many instances have neither been well or wisely chosen.

This is not right, when we take into consideration the large fees usually demanded for this form of work.

It is by no means uncommon for a gold or dental alloy plate to last efficient for ten, fifteen, or even twenty years, but I will venture to say, that with bridge work, it would be a rarity indeed, if it lasted a quarter of that time.

The last case of the kind that came under notice was in many respects, if the roots were healthy at the time of its insertion, suitable for this form of work, there being the roots of the two centrals and a lateral *in situ*. The two central roots had collar crowns and pins fitted in the root, while the lateral root had a collar and crown. Now what was the condition of these roots when this case was made, I do not know; all I can say is, that after less than a twelve months' wear all the roots became abscessed, loose, and offensive, and on the removal of the case all the roots came away with it, and were found to be extensively absorbed. The patient paid a large fee for the work, a case of four teeth, and the result was deplorable.

This and many other instances of a worse nature prove, I think, that great discrimination and sound judgment are required in the selection of these cases.

We will now draw the reader's attention to the several forms of pivot teeth and collar crowns.

PIVOT TEETH WITHOUT A COLLAR.

The cases suitable for this kind of work are those in which the teeth, particularly in the front part of the mouth are too

badly decayed to be able to make them serviceable or presentable by filling, or they have perhaps been chipped or broken by accident, such as frequently happens to the teeth of boys at school from cricket or football. In such cases it is usual to make a deep cut or groove in the tooth, or both its lingual and labial aspects with a thin corundum or carborundum wheel, well moistened with water, and then with a pair of excising forceps remove the crowns.

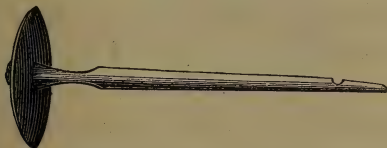


Fig. 43.

If we find on using the wheel that little or no pain is caused, we may cut into the tooth to such an extent, that the shock incidental to excising the crown, will be but trivial. Should this operation, however, cause pain, the patient may be allowed to take some nitrous oxide to complete the operation.

Before giving the gas, one should have, besides the excising forceps, a suitable drill, nerve barbs, and everything necessary ready, so that the moment the face piece is removed and the crown is cut off, a suitable instrument may be passed into the canal to remove the nerve.

In every case it is as well to make as deep a cut as possible into the tooth, as it lessens the risk of a fracture or splitting of the root.

It may sometimes be found impracticable owing to a constriction at the entrance to the canal, to remove the nerve while under gas; in such a case we may proceed, in the following manner, to devitalize it. First carefully clean the surface of the root with chloroform and thoroughly dry it. Next, take a small piece of blotting paper about twice the

size of a pin's head, and place over the exposed nerve. A little Harvard or Caulk's cement should then be mixed up and carefully moulded around the paper on the surface of the root; then before it hardens, the piece of paper should be removed, and replaced by another moistened with carbolic, and on which is some arsenious acid, this latter is then covered over and sealed in with the balance of the cement. By adopting these means one keeps the exposed nerve free, and avoids the risk of displacing the dressing while using the cement.

Harvard or Caulk's cement adheres very firmly to the dried surface of a root, and forms an excellent medium for retaining a dressing in such an exposed situation.

In the course of forty-eight hours, or less, the nerve will be found to be devitalized.

The root is now ready for the next operation, that is to enlarge the canal and remove by means of drills or broaches the remains of the dead nerve, then to cleanse the canal and seal the apex with a cone of gutta percha.

For tapering and enlarging the canal, removing debris, etc., the spring reamer (Fig. 44) will be found a most useful instrument.



Fig. 44.

The surface of the root may now be ground on a level with the gum at the back and slightly below the level in front, and may be conveniently done by means of a small broad



Fig. 45.

carborundum wheel. (Fig. 45.) The length of the canal in

the root is next ascertained, and after the canal has been enlarged to its proper size a piece of German silver wire is filed to fit it. It is as well to have as stout a pin as possible, and it should project from the root on a level with, but not above the neighbouring teeth. (Fig. 46.) This pin may be

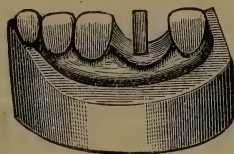


Fig. 46.

flattened at the projecting end, or have a small cross piece soldered to it (Fig. 47) so as to hold firmly into the composition that has to be used for taking the impression. Having softened a small piece of Crown composition, the thick end of the wire is warmed and pressed into it; then the wire is pushed firmly into the root, and the composition is pressed on to the surface of the root and the two neighbouring teeth with the thumb and finger, until quite hard, the fingers having been rubbed with a little vaseline beforehand. Or a strip of brass about $\frac{3}{4}$ of an inch wide may be bent up so as to form a small tray. (Fig. 48.) The smaller the tray and number of teeth taken in the impression, the better chance there is of taking an accurate model and preserving the direction of the pin in the root.



Fig. 47.

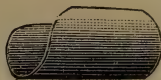


Fig. 48.

Upon the hardening of the composition the pin will be withdrawn from the mouth with the composition. Now take another piece of composition about double the size of a pea,

press on the surface of the root, and get the patient to close the mouth—that is for the bite. To this impression a model may either be made of plaster of Paris, Fusible metal, or Sullivan's cement, if with the latter the model should be placed on one side to harden for at least twelve hours.

Either of these materials will give us suitable models. We now remove the German Silver pin from the model and substitute one of gold or Dental Alloy; next we adapt a piece of No. 3 platinum to cover the root, or rather more than cover the root on its lingual, or palatal, aspect, but to be bevelled away from the labial aspect so that the neck of the tooth may fit on the root. Then drill a hole in the foil corresponding to the canal and press the fitted wire through it, and securely fix with a spot of hard wax (Fig. 49) this is then



Fig. 49.



Fig 50

invested in brick-dust and plaster and soldered. Replace the pin in the root and trim up accurately to fit, bevelling it down so that the tooth may fit on the labial edge of the root.

Now take a flat tooth of the right shape and colour, fit it to the root and adjust to the bite, back it with a piece of 18 carat gold, and then fasten it to the platinum covering the root with hard wax. Once more invest in Brickdust and Plaster, and solder with No. 2 solder flushing the solder up so as to cover the platinum, and make a biting surface. After finishing up and polishing, it is ready to fasten into the root; before doing so, it should be tried in, and if found correct to the bite, etc., the pin may be roughened, the canal in the root cleaned out with chloroform, and then thoroughly dried with the hot blast. The tooth may now be cemented into the root

with some thin oxyphosphate, introducing some up the canal first on a broken nerve barb, and a little on the pin and tooth, and then pressing it well home. The bite should be raised so that no pressure comes upon the tooth until the cement is quite hard.

A pivot such as described will last for many years.

When taking the impression for two or more pivot teeth, and the canals in the roots are divergent, a tray should be used with a perforated back; the pins are first of all adjusted to the roots then oiled, and left projecting about a quarter to half an inch above the teeth, the perforated tray is then filled with composition and pressed up into its place, the pins passing through the perforation. When the composition is quite hard, a mark may be made with the file on the pins to act as a guide, and then they may be withdrawn. The tray is now removed from the mouth, the pins replaced in the composition, and the model cast.

An ingenious modification of this system has been invented by Mr. R. P. Lennox. It consists in having a conical cap through which the wire passes; the cap is filled with composition, the pin is passed into the canal, and the cap pressed on to the surface of the root; when the composition is hard the cap and pin are removed, and the surplus composition trimmed away.

The pin and cap are replaced in position, and the impression taken with a perforated tray, the pin is withdrawn through the tray, which is then removed. The pin is next placed in position in the tray, but before Plaster of Paris is poured into it, a copper tube is passed over the end that goes in the root, this tube is retained in the cast, and forms a metal lining to the canal in the plaster model.

Mr. Lennox claims, and very justly, that by his system, a perfectly accurate impression of the surface of the root can be taken, at the same time protecting it from injury by drag-

ging against the neighbouring teeth, when withdrawing from the mouth.

Another method for making the pivot is to drill a parallel hole in the root with a straight twist drill, to the proper depth and then to countersink the surface of the root (see Fig. 51), a piece of straight wire is next fitted into the canal, and a piece of plate, No. 9 gauge, like a thick washer, is drilled and made a to slip over the wire and fit into the countersunk hole (see Fig. 52). This should be flush with the



Fig. 51.



Fig. 52.



Fig. 53.

surface of the root. We now fasten the pin and washer together with hard wax and invest in brickdust and plaster, and solder with No. 2 solder, (Fig. 53). After adjusting this to the root, a piece of No. 3 soft platinum slightly larger than the root is taken and adapted to the surface; then a hole is drilled or punched in it, and it is passed over the pin, thus covering up the whole surface of the root, this is also fastened to the pin and washer and soldered, and finally burnished to the surface of the root, and over its lingual aspect.

The tooth may now be fitted in the usual manner and built up with solder. Before cementing the tooth in the root the pin should be made four sided, and slightly roughened. A very small amount of cement will be sufficient to hold it.

To be continued.

DENTAL HYGIENE.*

By Mr. J. CLIFFORD WING.

Mr. President and Gentlemen,—I think that you will agree with me when I say that one of the chief duties of the Dental Surgeon is, not only to remedy the ravages of Dental Caries, but to use all possible means of averting the tendency to decay, especially among the rising generations. It is truly said that “Prevention is better than cure,” and this is especially so with the teeth, than which there is no part of the human organism more subject to disorder. There is no doubt that this, the prophylactic side of Dental Surgery, is not generally considered so important as it really is, and thus, by briefly setting before you a few of the principles of Dental Hygiene, this paper may be the means of causing some of us to think more highly of the subject, and to endeavour to carry it into practice. Nevertheless, I hope that you will forgive me for bringing before your notice so much elementary matter as is contained in this paper. I have not ventured so much on an attempt to instruct, as to interest some of you more in what I may call the Prophylaxis of Dental Surgery.

We are all familiar with the fact that the Dentist is engaged in a perpetual conflict with micro-organisms, and that the mouth, with its warmth, moisture, and air, is a most excellent incubating chamber for our enemies. Besides this, various digestive changes are constantly going on in the mouth. Starch is being converted into grape sugar, and lactic and other acid fermentations are always taking place. So that the factors of Dental Caries are to be found in the mouth,

* Read at the Students' Society, National Dental Hospital.

especially in an unclean mouth. The particles of food which lodge in the interstices of the teeth form a most suitable pabulum for the multiplication and habitation of micro-organisms, which turn the food into a fermenting mass, and this, being of an acid reaction, is highly deleterious to the tooth structure. This, as already remarked, is of course especially so in dirty mouths, in which the fermentation and putrefaction are allowed to continue undisturbed.

The question is, how are we to combat these forces? First of all, it is undoubted that teeth which are highly calcified are much more resistant of decay than those which are soft and poorly calcified, and we will consider first the means which can be used to make the teeth better in structure. To begin at the beginning, it is needful that the tooth germ should have the proper constituents supplied to it for its growth and calcification, both before and after birth of the child. Therefore the diet of the mother should, as far as is practicable, include such elements as are fitted for the nourishment of these organs, together with what is required for the general support of the child. Whole-meal bread, as our President well showed us in his opening address, is preferable to ordinary white bread, from which all the tooth and bone forming constituents of the grain have been eliminated. It is chiefly the outer portions of the grain which contain the tooth-forming phosphates, and these are generally discarded in the manufacture of flour, so as to produce a whiter article. That which is discarded is full of nutriment for the teeth; that which is retained is little more nutritious than starch. Oatmeal, and like substances, are valuable articles of diet for tooth and bone-forming purposes.

Then, after birth, the food should be of the necessary character to produce well calcified teeth, as we must emphatically remember that the few short years of childhood settle the quality of the teeth of a lifetime.

The best dietary for the infant is the natural milk, and later, cow's milk. Milk has been said to be "the food prepared by Nature for the maintenance of the young," and as it contains most of the substances needed in the formation of the teeth, as well as those for the general welfare of the child, it should be the staple article of diet during infancy, and its use should be continued throughout childhood and youth. When the child is old enough, the use of oatmeal and whole-meal bread, as a part of the daily diet, will tend to produce teeth good in structure and well calcified, and therefore resistant of decay. As the dentine and tooth pulp always exert a certain amount of vital action against Caries, it will be seen that diet is of importance throughout life, to the welfare of the teeth.

Notwithstanding all this, the *most* essential agent in the preservation of the teeth, is *cleanliness*, for so great are the powers of the factors of decay, that unless kept perfectly clean and aseptic, the best of teeth will probably ultimately fall a prey to Dental Caries. To a pleasing and agreeable expression of the face, a clean and healthy denture is of the greatest consequence. We all know the difference between a clean and unclean mouth. The clean mouth, with its bright looking teeth free from deposit, will look pleasant, even though the teeth themselves may not be regular. The gums will be healthy, and the breath pure and sweet. The unclean mouth, on the other hand, contains dull, dirty teeth, covered at the margins with deposit, the gum is reddened at the edges, and soft and spongy, and the breath—well, most of us can speak from experience on *that* subject after our extraction mornings, and the less said the better. So that both for the preservation and appearance of the teeth, it is of the greatest importance to pay attention to cleanliness. A person cannot be brought too early into habits of strict cleanliness; a tooth-

brush can scarcely be placed too early into the child's hands with instructions how to use it.

With regard to the tooth-brush, there is no need for me to say very much. It must be fairly small, with bristles not too closely set together, and of medium stiffness. It is preferable to have the brush notched crosswise, and to have the central rows of bristles longer than the outer. It should always be kept in the open air, and certainly not shut up in a closed vessel, as is so often the case. It is useful to have an alternation of a couple or more brushes in use at a time. It is hardly necessary for me to say that the teeth should be cleansed night and morning, especially at night, for if not, the particles of food are left undisturbed for some hours, to ferment and putrefy, and exert their deleterious action on the teeth whereas, if the brush has been used, all these agents of decay have been removed. The practice of giving children a biscuit or sweet on going to bed must be strongly condemned, as it fills the interstices of the teeth with highly fermentable material, which remains to continue its injurious action while the child sleeps.

To return to the use of the toothbrush,—the movements should not so much be the usual horizontal action, but an up and down movement, sweeping the debris from the gum margin to the crown. In the former movement, the spaces between the teeth are hardly touched, indeed, debris is often swept into them, while in the latter the interstices and all parts of the teeth are cleansed.

Patients should be made aware of the fact that they are, or ought to be, cleaning the teeth, not for appearance so much as for preservation, and that it is essential to brush the back teeth as well as the front ones, and also the lingual and crown surfaces as well as the buccal or labial. In fact the teeth should be brushed in all those parts which are accessible to the tooth brush.

Then with regard to Dentifrices, which have generally to be used to produce an aseptic and clean condition of the mouth and teeth. The preference is usually given to a simple tooth powder, which should be used at least once daily. An ordinary simple tooth powder, should contain:—

(1) A scouring and polishing powder, of fine quality, such as precipitated chalk.

(2) An antiseptic.

(3) An ant-acid, such as carbonate of Magnesia.

(4) A cleansing agent in the form of a neutral soap.

(5) A flavouring agent, such as Otto of Roses, or Winter green.

With regard to the antiseptic, Carbolic Acid is frequently used, but by some it is said that it exerts a softening, though whitening action on the teeth, but perhaps this is a debatable question. Oil of Cassia is strongly suggested by Miller. Tooth pastes are harmful if they contain honey in their composition, as many do, for this being a highly fermentable material, is therefore injurious to the teeth.

Mouthwashes are useful in certain cases, generally in unhealthy conditions of the mouth and gums, and should be of an antiseptic and astringent character. The use of an antiseptic mouthwash is often desirable where artificial dentures are worn, but is not needful if the plates are kept thoroughly clean, as they should be.

Advertised powders and washes should be avoided, as of course the ingredients are not known. Any dentifrice that is recommended for whitening the teeth is either incapable of accomplishing what is claimed for it, or does so at the expense of the integrity of the enamel. It is a good plan, in cases of acid saliva, to rub a little precipitated chalk into the interstices of the teeth the last thing at night. The quantity need only be sufficient to counteract the acidity during the night. Lime water may be used as a mouth wash where the mucous

secretions are viscid or foetid. and it also has the effect of increasing the amount of lime salts in the structure of the teeth. Its unpleasant taste may be disguised by the use of a flavouring agent.

Cleansing the mouth after each meal by rinsing it out with a weak alkaline solution, is of very great service in preserving the teeth, but I am afraid few would take sufficient trouble. But this should certainly be done after partaking of acid medicines, fruits, &c. Phénol Sodique makes a good mouth-wash, as it is antiseptic, astringent, antacid, styptic and disinfectant. Listerine, Izal, and other preparations of a like nature are also useful. More than usual care should be taken during sickness and pregnancy, to see that the mouth is kept in a clean aseptic condition, this consideration being frequently overlooked at such times.

Toothpicks, of the quill variety, should be used after a meal, to clean the interstices of the teeth, from débris. Threads of floss silk, rubber strips, &c, pressed between the teeth, are also useful, and can be used by the gentler sex instead of toothpicks.

I need scarcely add that one of the most important points to urge on our patients in the preservation of their teeth, is the necessity for a periodical inspection of their mouths by a dentist.

With regard to the care of the temporary teeth, it is most essential to see that the teeth of children are as well looked after as those of adults. The temporary teeth are not so highly calcified as the permanent set, and are therefore less resistant of decay, and, as it is most important that none of the deciduous teeth should be lost before their time, and also for the sake of the child's comfort and health, it is certainly necessary to pay attention to the hygienic conditions of children's mouths.

The mother should clean the teeth in infancy with a camel's

hair pencil, and when the child is old enough, as I have already remarked, it should be taught the use of a small soft tooth brush. Once becoming accustomed to this, the child will find it impossible, in later life, to neglect the cleansing of the teeth, and thus the good habit will be inculcated and continued through life.

Periodical inspection of the child's mouth by a dentist, until the dentition is complete, ought always to be the rule, and not the exception.

You will notice that nearly all the above preventative measures have to be carried out by the ordinary members of the community, under the direction, at most, of the Dentist, and now I come to speak of those measures which the dentist alone is capable of executing. He must put the mouth into thorough order by filling cavities, crowning roots, fitting dentures, &c. All pits, fissures, or weak spots in the enamel should be levelled up, and in filling, great attention should be paid to contouring. If the filling allows food to be forced past it to the gum, bad results will inevitably ensue, so that it is important that fillings should be so contoured as to touch the neighbouring teeth, thus preventing the passage of substances irritating to the gum, and which, when fermented, would tend to cause decay.

All deposits of salivary calculus should be scaled off, and the teeth polished, as tartar is a direct cause of dental disease, and occasions absorption of the bony sockets. Any irritating stumps should be extracted, and diseased conditions of the mouth and gums treated, to render them healthy. Cases of overcrowding and irregularity, which are predisposing causes of Caries, should be remedied by symmetrical extraction and regulation, respectively.

Then I think I must say a word about Hygiene in relation to the Dental Surgeon himself. The most scrupulous cleanliness in connection with his work, instruments, and general

surroundings, is most essential to both the dentist and his patients. It is necessary for the dentist's health, which is an important consideration in such a personal calling as his, to have everything in connection with his work in a healthy and sanitary condition. The operating room and laboratory should be plentifully supplied with fresh air, and should be well ventilated. The hands should be kept perfectly clean, and after operating on an unhealthy mouth, a wash in water containing a little antiseptic is very useful and pleasant. Instruments and mouth-mirrors should be most carefully sterilized, on account of the ease with which diseases may be communicated to a patient by inoculation. An instrument may be quickly sterilized by passing it through the spirit-lamp flame, after wiping, but it is best to use such agents as Carbolic Acid, Perchloride of Mercury, Peroxide of Hydrogen, &c. Serviettes, glasses, burs, rubber-dam, &c., should all be well looked after, and rubber-dam should never be used twice unless thoroughly disinfected.

Gentlemen, to conclude, let me again impress on you the importance of cleanliness, which is undoubtedly the principal prophylactic against Dental Caries; and were it possible to keep the teeth absolutely clean, it is probable they would rarely, if ever, decay. If cleanliness were carried out as far as is practicable, caries would at any rate be much less frequent.

I feel I must again apologise for drawing your attention to subjects with which many of you are well acquainted, and whose principles you faithfully practice. But I think it is as important to prevent, as to learn to cure.

The value of the teeth makes this branch of our studies broader and more comprehensive than might be supposed, and its importance requires that we should direct to it our closest attention.

Gentlemen, I thank you for your kind attention to a rather dry subject, and hope this paper will lead to a good discussion, and that it may be useful to at least some amongst us.

British Journal of Dental Science.

LONDON, NOV. 16, 1896.

GENERAL HOSPITALS AND DENTAL APPOINTMENTS.

A correspondence is at present proceeding in the pages of the *British Medical Journal* upon the above topic, the question at issue being whether the dental Surgeon to a General Hospital ought to be possessed of the M.R.C.S. as well as the L.D.S. diploma. The correspondence is in consequence of the election to the post of dental surgeon to a London Hospital where the diploma of the M.R.C.S. was not required in addition to the L.D.S. The post was advertised in the usual way, saying that a surgical qualification was necessary. After the candidates' applications had been received, and on the very eve of election, this advertisement was withdrawn and a second one issued, in which no mention was made as to a candidate being required to possess a surgical qualification. We are told that this change of front was only accomplished after a "rare fight" in Committee. Several excellent dentists holding both surgical and dental diplomas applied for the appointment, but one of the posts was awarded to a gentleman who does not hold the M.R.C.S.

One correspondent offers two reasons to account for this. The first is that the medical profession is jealous of the dental profession claiming equality in time to come; the second is that the candidate holding the L.D.S. alone has a greater degree of technical prosthetic excellence than the one who has gone through a fuller medical training. The first reason may be dismissed as absurd; the second has

considerably more justice in it, because it is an acknowledged fact that when a student has to work up for the "triple qualification" in a certain time, some of his purely dental work is very often more or less scamped. We think, however, that neither of the above reasons fills the bill as we consider that the occasion was peculiar, and that the "personal equation" played the chief part. In the first place we suppose the Medical Committee were within their right in making the first advertisement null and void: whether they were morally justified, is another matter. Secondly, after the "rare fight in Committee," the election was evidently a foregone conclusion, as the claims of a certain gentleman, who the correspondent states, was said to be "twenty years in front of his profession" were too great to be ignored. We consider if the latter statement is true the Committee were justified in straining every nerve to obtain such a *rara avis*, but, as the correspondent says, "although there may be some stray straws twenty years behind the profession," he feels convinced that "amongst our leaders there is no man who has this advantage, for what one man lacks another possesses."

But the point he emphasizes and which we consider the *crux* of the whole matter is that "no amount of technical mechanical skill, however great, can take the place of a sound knowledge of surgical pathology." In a hospital where the dental surgeon does all the work himself, has no assistants or dressers, and teaches no students, the most skilful dentist should be chosen irrespective of surgical diplomas; but in a great teaching institution like a general Hospital we consider that the dental surgeon should have had a thorough medical and surgical training, not only as essential to the correct diagnosis of oral conditions and their relation to other parts, but from the point of view of increased knowledge as a teacher, and the increased weight such a diploma carries in the eyes of the Students. One of the results of this election seems to be that the dental Surgeon is deprived of a seat and a vote on the Medical Committee, the late occupant of the post having had that duty and privilege. However, we do not think that those students who are taking

and those who have taken the "triple qualification," need feel disturbed about what has been termed a "retrograde movement." We consider as aforesaid, that the circumstances of the case were peculiar, and we hold that other things being equal, the possessor of the membership, or the fellowship, of the College will, and ought, to have the advantage in a teaching institution. Whether he is any better dentist is quite another matter—no institution ought to be dissatisfied with the diploma granted by the College to protect the public—but from the teaching point of view, and as a member of the Staff, we say the higher the qualification the better. We are encouraged in this belief from the fact that the other post vacant at the election referred to above, was conferred upon an L.D.S., who in spite of his M.R.C.S. was evidently too good to be passed over. Another gentleman with the double qualification also wrote to the *British Medical Journal*, but as we have been unable to decide what views he holds on the main question, we do not stay to analyze his somewhat vague pronouncements. Mr. Constant writes a much clearer letter, and makes a practical suggestion that the College of Surgeons should grant its membership to dental surgeons without requiring that they should also obtain the Licence of the College of Physicians.

NATIONAL DENTAL HOSPITAL.—The Annual Dinner of the Past and Present Students will be held at the Holborn Restaurant on the 27th inst. Mr. Frederick Treves will preside, and any old students who have inadvertently not received notice, are requested to apply to the Secretary for tickets for themselves or guests. The distribution of prizes will, we understand, be a separate "function" this year to take place later in the Session.

THE DENTAL HOSPITAL OF LONDON.—The Annual Dinner of the Staff, and Past and Present Students, will be held on Saturday, December 5th, at the Hotel Metropole (Whitehall Salon), under the presidency of R. H. Woodhouse, Esq.,

M.R.C.S., L.S.A., L.D.S. Gentlemen either now or formerly connected with the Hospital or Medical School, who may, through inadvertence, not have received special notice, and who desire to be present, are requested to communicate with the Dean, at the Dental Hospital, 40, Leicester Square.

RELATION OF TUBERCULOUS GLANDS IN THE NECK TO DENTAL CARIES.—Dr. Starck, from observations upon 113 children, has established a distinct relationship between lymphadenoma and dental caries in forty-one per cent. of cases. In two cases he succeeded in discovering the presence of the tubercle bacillus in the tissues situated between the roots of a molar in direct contact with diseased glands. He considers it most important in treating these cases to extract all carious teeth, and in every way to place the oral cavity in a perfectly healthy condition.

CONTRADICTORY OPINIONS.—In the same number of *Items of Interest* we find the two following extracts concerning the effects of Nitrous Oxide gas. The first by G. A. Colton, says:—"Consumptive patients will often feel stronger for days after inhaling it, because it supplies to the blood that element--oxygen—for the lack of which they are growing weaker and weaker. The good effects, however, are only temporary. Of what is nitrous oxide, or laughing gas, composed? It is composed of precisely the same elements—oxygen and nitrogen—as the common air, only the proportions are different. In the air we have (in round numbers) one-fifth oxygen and four-fifths nitrogen. In this gas there is half oxygen and half nitrogen, or by volume, one of oxygen to two of nitrogen. Oxygen is the life-giving principle of the air, and in this gas we have more of it; a person lives a little faster while under its influence." The second by S. A. Aykroyd is in direct opposition, and is a good reply to the above. "Therefore, nitrous oxide gas (N_2O) will no more sustain life than carbonic acid gas, or

nitrogen gas, or olephant gas, or any other inert gas. While it is maintained that N_2O will support combustion by applying a lighted taper or a piece of heated charcoal, the fact is lost sight of that there is not heat enough in the human body to decompose the two chemical elements and set the oxygen free, and that it is the free oxygen and not the nitrous oxide gas that support combustion."

HEREDITY AND TOOTH EXTRACTION.—The question whether the extraction of teeth through many generations has an effect upon present-day teeth is one which is open to argument. On one side it may be said that a tooth is not part of an organ—like the tip of a finger—but is a separate organ produced in a special manner, and if that whole organ is destroyed through several generations it will have the effect of modifying the type and affecting its integrity. On the other hand, in comparing mutilations such as continuous docking of horses, dehorning of cattle, and circumcision, we find no appreciable difference in the type, though of course these are instances of removal of a part, not the whole. But, as Sir James Crichton Browne once remarked, when Nature removes an organ it is because that organ is not longer wanted, and the removal takes place by a kindly gradual suppression, not by a foul and painful disease like dental caries or pyorrhœa alveolaris.

TRUE MODESTY.—Dr. Abbott in a recent speech complained of a previous speaker having placed the dentist second to the surgeon. Dr. Abbott took up the cudgels for his profession as follows. "We occupy no second place. We stand at the head to-day, and it is universally understood by the medical profession that the dentists, as a class, in all their efforts to improve their art and in all the improvements that have been made in the line of materials and appliances, are far ahead of them and are leading the medical profession, especially in microscopy. This being the case, sir, I will say that we do not occupy any second place among

the professions." Dr. Abbott does well to stand up for the just rights of his specialty, which has accomplished great things, but we think the more graceful attitude to have taken would have been to have doffed his hat to the elder sister, while being proud of following in the train of the younger.

ACCIDENTS AND COMPENSATION.—A case came up before Mr. Commissioner Kerr in which a workman claimed £234 for injuries received through the bursting of a hydraulic apparatus. It seems that a jet of water struck the man in the face, knocking out one of his teeth and injuring his eyes. The defendants on the other hand denied that the man had lost his tooth through the water striking it, and called medical evidence to show that the defective vision was due to excessive smoking. Beyond a ducking the man had received no injury whatever. Mr. Kerr, who has the reputation of not being easily hoodwinked, took the defendant's view of the case, and seemed to think it was a case of "trying it on."

ANOTHER CASE.—In this case, tried at Arundel, the plaintiff sued for £50 as damages for personal injuries received from the kick of a horse. The horse broke his jaw, and rendered him unfit for his business for nine weeks. The £50 claim was made up thus, £10 10s. dentist's charges for new teeth, he having lost fourteen of his own by the blow, £10 paid to a man to do his work for nine weeks, and £32 10s. for loss of profit during that time. The Judge considered there was want of due care in leading the horse, so gave judgment for the plaintiff, remarking that he thought no one would like their jaw broken and fourteen teeth out for £50.

AMOUNT PER HEAD SPENT ON DENTISTRY IN THE UNITED STATES.—Dr. Chilson has evidently a taste for figures. He estimates that there is more than three quarters of a dollar per head spent for dentistry per annum in his part of the

States. This average, when applied to the whole Republic gives an aggregate sum of 52,000,000 dollars, which means 2,400 dollars to every practitioner. He thinks that perhaps these figures may be optimistic, but they are of sufficient accuracy to demonstrate that dentistry as a profession does not do so badly in the States.

MATCH MAKERS AND THE DENTIST.—A strike has recently occurred at a large American match factory. With a view to preventing phosphorus necrosis, and a possible suit for damages in consequence, the proprietors of the factory posted a notice ordering the factory girls to present a dentist's certificate by a certain date, stating that their mouths had been put in good condition. Very few of the number availed themselves of the services of the dentist placed at their disposal, and rather than undergo the ordeal, have gone out on strike. We are reminded of the lines of Juvenal:—

“Look round the habitable world ; how few
Know their own good, or knowing it, pursue.”

SCHOOL CHILDREN'S TEETH.—The Committee on School Hygiene of the Ontario Provincial Board of Health, recently made the following recommendations which were adopted by the Board, “That dental inspectors be appointed by local Boards of School trustees to periodically visit schools and examine children's teeth, and that a dental hospital be started in Toronto for the benefit of poor children, and that these recommendations be urged upon the attention of the Minister of Education.” This is a move in the right direction. From what we have seen, the teeth of the children in our Colonies are as bad or even worse than those of our children here.

OUR PAUPER CHILDREN'S TEETH.—In painful contrast to the above humane recommendation we find the following in the *Daily Chronicle*:—“Workhouse Children's Teeth.—A

lively scene occurred yesterday at a meeting of the Burnley Board of Guardians. Lady O'Hagan proposed the appointment of a dentist to attend the children in the Cottage Homes. Mr. Barlow objected to the expense ; they should remember they were only workhouse children. Few ratepayers sent their children to dentists. Lady O'Hagan : Then they ought to. After the exchange of some personalities, the resolution was referred to a committee."

YOU PAY YOUR MONEY AND TAKE YOUR CHOICE.—A dentist in Kirchinew in Russia, publishes a list of fees in which the following occurs :—Tooth extracted without pain, one rouble ; tooth extracted *with pain*, half a rouble.

EUTHANASIA.—The Rev. Dr. Wendte, of Oakland, California, has caused a sensation by advocating some form of painless death for incurables. He reiterated his belief in a sermon printed in the *San Francisco Call*, in the course of which he said : " But a step beyond establishing hospital wards is needed, and it is one which civilized society is ready to take. I refer to the humane disposal of those who are suffering needless and cruel tortures, and whose death is inevitable. Why seek, as now, to prolong their agonies ? Why exhaust the resources of medical science to keep them in misery ? Would it not be a more Christian act to put them gently out of pain ? We mercifully end the life of a suffering horse or dog whose restoration is impossible. Shall we be less merciful to our human kind than to the brute creation ?"

DISRESPECT.—" The trouble with this tooth," said the dentist, probing it with a long, slender instrument, " is that the nerve is dying." It seems to me, doctor," groaned the victim, " you ought to treat the dying with a little more respect."

Review.

Dental Materia Medica, Pharmacology, and Therapeutics, by Charles W. Glassington, M.R.C.S., L.D.S. Edin., Senior Dental Surgeon, Westminster Hospital ; Dental Surgeon, National Dental Hospital, and Lecturer on Dental Materia Medica and Therapeutics to the College. J. and A. Churchill, London. 1896.

Although attendance on a course of Lectures on Materia Medica is not obligatory for the L.D.S. curriculum, yet no student now-a-days can hope to escape some searching questions in this subject, when undergoing the ordeal of examination. A knowledge of Materia Medica and Therapeutics in practice is also of immense benefit, while to be able to write an efficacious prescription in decent style ought to be within the scope of all. To this end, Mr. Glassington's book, which we have read with interest and profit, aids in no small degree. It gives the information required without being too voluminous or wandering too far afield, while the Posological Table, directions for prescribing, Prescription writing, and Notes on the rarer drugs and on reagents used in Dental Microscopy, make it a most useful book of reference.

Having said this much, we must confess that we do not quite see the object gained in separating the work into Inorganic Substances, Synthetical Compounds, and Organic Substances. We think that the simple alphabetical arrangement would have been much better right through. On page 15 Mr. Glassington recommends Listerine. On the next page he deprecates prescribing too many drugs together, and gives an instance of a prescription he once saw having no less than eight antiseptics. Strangely enough, Listerine contains just that number. On page 22, the author would lead one to suppose that the ounce used in dispensing is 437.5 grains. It is invariably 480 grains *in dispensing*, never *avoirdupois*. He gives the litre as corresponding to 2.113 pints. We think that he will find upon reference that it is 1.76077 pints, roughly one pint and three quarters. Parrish's food is given under Hypophosphites ; it is a syrup of phosphates. Liniment of Aconite is not made from the leaves and tops, but from the root of the plant. We think that Light Magnesia in the dentifrice on page 216 is most probably an error for the heavy carbonate,

and we are of opinion that the application of Carbolic Acid 1-20 to a partially devitalized pulp (p. 51) would not be as efficacious as using the strong acid. Sulphate of Copper is not an ingredient of Copper Amalgam, though it is used in its preparation.

These are all slight matters which can be rectified in a future edition. We congratulate Mr. Glassington upon producing a useful work, which is moreover enriched by a short but very practical chapter by Dr. Maughan on General Anæsthesia for Dental Operations. Those who are aware of Dr. Maughan's long experience as an anæsthetist will know that he speaks from the standpoint of common-sense practical knowledge. The work is well printed and well bound, and reflects credit on all concerned in its creation.

Abstracts of British & Foreign Journals.

PYORRHŒA ALVEOLARIS.

By Dr. YOUNGER.

Dr. Younger says that he considers pyorrhœa to be a disease of the pericementum and not of the gums or other tissues. He long ago abandoned the use of iodine except in cases of excessive inflammation. What is wanted is to create an irritation that will excite granulation. That is best accomplished with lactic acid which will prove successful in twenty-four out of twenty-five cases. Dr. Younger described a number of cases successfully treated in the clinics of the Stomatological Club, of San Francisco. If this treatment fails it will be because all deposits have not been removed, or because the pockets have not been first cleansed of blood, serum, etc. The lactic acid is best kept in a little test tube which can be held over the alcohol flame until liquefied and warmed. If not warm it will cause too much pain. One application, *once for all*, will be all that will be required if the deposits have been thoroughly removed and the pockets properly cleansed. He said: "You may laugh, but try it." Before applying the lactic acid the surrounding tissues should

be protected by coating with glycerine and covered with cotton ; then flood the pocket. The lining membrane will be exfoliated, contraction follows and the gum soon clings closely to the root again. Then wait a week. If the point of the syringe can be introduced it is proof that the deposits have not been thoroughly removed, or that the application was not sufficiently thorough to cause perfect exfoliation of the lining membrane, and the treatment must be repeated.

When union is not prompt in cases of implantation the application of lactic acid in the socket will secure perfect union, which, Dr. Younger said, upholds him in his theory of persistent vitality, as there could not otherwise be such perfect reattachment."

He said : " By my method take one tooth at a time and give one, two, three or four hours, if necessary to the removal of deposits. The next day take another tooth in the same way. If there are three contiguous teeth to be treated, clean the central tooth and the adjacent sides of each of the adjoining teeth. The next day finish the outer sides but do not disturb the central parts. The treatment is very simple but it *must be thorough*, and be very particular not to do any washing out after applying the lactic acid. Flood the pocket and leave it there. As a subsequent wash chlorate of potash as strong as can be borne will be found very soothing."

If there is not *absolute union* there is no cure. After treatment the conditions are absolutely the same as where there has been no pyorrhœa, or as before the attack.

Dental Register.

MASTICATING.

By Dr. TAFT.

If we say we know how to masticate properly, we sin against light and knowledge. We had better say we do not know. I have often asked dentists how much they urge their patients to masticate properly ? Some of them say they never speak to their patients about it, and very rarely have I heard one say that he gave any special information or urged his patients to masticate thoroughly. It is not only the mastication, but the thorough insalivation that is required.

Those persons who masticate their food most thoroughly have the best teeth. They have the least dyspepsia and the best nourished tissues in the body all through, and are better able to withstand all attacks of disease than those who do not masticate thoroughly. I know from observation that the majority do not masticate their food in anything like an adequate degree. I have noticed in this village a number of dentists, and I have observed that they take their meals in a few moments time, the food not being thoroughly masticated nor thoroughly insalivated. I believe if the dentist can impress on his patient the importance and the necessity of thorough mastication, that he has done one of the greatest services for his patient that is within his power. It is better than treating the diseases and conditions which we so frequently meet. It is hygiene of the mouth and the teeth, and it is for the benefit of the entire organization of the patient as well as of the teeth. The mother, the father, the nurse, and anybody in care of a child should notice it as early as three years of age, and teach it to masticate thoroughly and properly. The habit will stay with it through life, and prevent many of the ills and distresses that assail us.

International Journal.

TEETH OF OLD AGE.

By Dr. BLACK.

It is a fact that the teeth become more dense and their specific gravity becomes greater from youth to old age; but this difference is not great. It is a difference that requires the finest powers to demonstrate. The increase in strength is not very great. The difference in teeth is not very great, but it is certain. Follow these differences and you will see. Take the teeth of a young child, and you will find average density; take the child in the teens and then in the twenties, and you will find an increased density, then up to thirty there is slower increase, and from thirty to forty or forty five the increase is very slight. From forty-five to sixty the increase in density is greater again. This is the way in which this has developed itself in my experimental work. I understand that Tomes is now repeating this work. I expect that he will practically substantiate these results, though not precisely, for no two sets of teeth taken from among one hundred per-

sons will give the same results. The difference in density of the teeth of the same person is almost as great as the differences in the teeth of one hundred persons.

Of course, the moment the pulp is dead the increase of density stops. This increase of density occurring in old age or in persons past middle age shows very plainly that the teeth require nutrition throughout life. In teeth that are worn down the pulp has receded, and the enamel has receded, and when it is worn away the strength of the dentine is impaired in proportion to the recession of the pulp. That wearing away of the teeth that we have come to regard as normal produces an abnormal condition of the tissues of the dentine. That tissue of the dentine has lost its vitality, fluids are admitted to the dentinal tubes, and that dentinal tissue becomes impaired and its strength is gradually lost in perfectly sound teeth. This is shown very clearly by experiments. Wherever we have a tooth that has lost its pulp and the vitality of the dentine is gone, and that tooth begins to show a discoloration, there we find that the strength of the dentine is impaired. When we come to test its strength, with the dynamometer, we find that the strength is impaired. We find a peculiar disposition of the enamel to chip off from the dentine. It is much more liable to be broken away. In the tooth that has its pulp and its proper nutrition, this parting from the dentine is not observed. This difference became very marked in this class of experimental work, all of which goes to show the value of the dental pulp, not simply in youth but through life. The breaking away and the causes of that breaking away seem to be well shown in this class of experimentation. The pulp is important, not only in youth but continually thereafter. As a person grows older its importance may be diminished, but it is still important, and it seems to me, that if we can do anything to prevent the wearing down of the tooth, it becomes our duty to do so. We can build up the tooth with platina, thoroughly annealed and malleted, and we can make it much harder than hammered cast gold. We can make it stronger than the gold that we put through our rolling mills and make into plates.

Items of Interest.

With regard to the cure of the disease, I think there is but one, and that is the forceps. I have never seen a case that has been cured.

Dr. Trueman.

VARNISHING CAVITIES.

By Dr. W. G. BROWNE, Atlanta, Ga.

The incompatibility of tooth substance and the metals we use for filling teeth is a well recognized fact, and it is always good practice to interpose some substance between the metal and tooth structure to prevent, as far as possible, any injurious effect from such incompatibility. Gutta-percha, chloro-percha cement and varnish, each have their merits, but none seem to have so many points of excellence as a clear resin, such as damson, dissolved in chloroform. It acts as a non-conductor of thermal changes, as well as an insulator against electrical influences. It is not readily soluble in the fluids of the mouth. Being transparent, no discoloration is shown when used, where enamel walls are thin; in fact, it prevents discoloration of the tooth from oxidation when an amalgam is used which contains metals which oxidize in the mouth. To a limited degree, it may act as a support to frail walls of enamel, especially if the filling be inserted while the varnish is in a plastic state; this refers more especially to amalgam fillings.

In the insertion of large gold fillings it is helpful in starting the filling, holding the first mats or cylinders of gold firmly adherent to the dentine, and makes it almost out of the question for gold fillings to come out if proper attention has been given to the method of applying the varnish and gold in the tooth when commencing the filling.

I do not for a moment advance the idea that we should depend on the varnish to retain the filling, independent of other means, but it will not be found necessary to make deep retaining pits, but only slight undercuts in the most convenient places in the cavity, thus saving the operator valuable time, and no harm can possibly result from its use, while much good must come.

I am satisfied that when the profession realizes the benefit accruing from this method it will be universally adopted.

Southern Journal.

ROOT AMPUTATION.—Abscesses which refuse to yield to local treatment and amputation being decided upon, the root should be filled before the operation is performed.

H. C. West.

LINING ROOT CANALS WITH SILVER NITRATE.

By L. P. BETHEL, D.D.S., M.D., Kent, Ohio.

Repeated attempts at pumping it into the canal by means of wooden points, broaches, etc., proved unsatisfactory, for the silver nitrate solution would not go beyond the point of penetration of the broach, and the cases most desired to treat were small, branching or tortuous canals, where it was impossible to pass even a broach. By the aid of cataphoresis, however, the silver nitrate was forced beyond where the broach extended, into small canals. Microscopic examination shows that the nitrate of silver is forced, by means of cataphoresis, to a greater depth into the tubuli of the dentine, more thoroughly sealing them than when applied to the surface by ordinary mechanical means. Various strengths were employed from 10 per cent. to a saturated solution, those giving the best results being from 40 per cent. to a 75 per cent. solution. The process of application is a simple one; adjust the rubber dam, and if the crown of the tooth needs protection from discolouration, apply a thin coating of melted wax to the interior surface. Next apply the silver-nitrate solution to the canal by means of a wooden tooth-pick or any other suitably shaped piece of wood, pump it downward into the canal as thoroughly as possible, place the electrode into the pulp-canal opening, then a pellet of cotton saturated with the nitrate solution around the electrode at the orifice of the canal, and the electricity does the rest. The electric current turns the cotton first a light green colour, which grows darker until almost black, and serves as an indicator. The time of application will vary according to the condition of the root-canal—whether well opened, its size, strength of current, and per cent. solution of the silver nitrate. The higher per cent. the solution, the better conductor it makes, and the quicker it is deposited. From one to five minutes seems to be ample time.

After removing the electrode, cleanse the pulp cavity and canals as well as possible, with diluted ammonia to neutralize the nitric acid set free, and also to hasten the darkening of the nitrate of silver.

This root-canal lining is not advocated for all teeth; indeed, the practitioner must use judgment in its application. It would not be advisable in the anterior teeth on account of

discolouration, or teeth where the foramen is large, as teeth not fully developed and others, on account of forcing it through the apex of its root. In trying to force the solution through the apex of a normal root, out of the mouth, in every instance it has penetrated just through the foramen and stopped, due, possibly, to forming an albuminate when coming in contact with tissues at the end of the root, and thus limiting its own action. The object of these experiments is to find a means of treating root-canals that are too small to admit a broach, those branching or tortuous, those in flat-rooted teeth, etc., where it is doubtful about inserting a protecting root-filling. If such root-canals are thoroughly lined with the nitrate solution, and it penetrates somewhat into the tubuli, as it does, the probability is that there will be no subsequent trouble, even though the root-filling should be defective. And, indeed, it is a question if root-filling would be necessary at all, especially in small canals. Roots treated by this process out of the mouth, when filed, reveal the outlines of the canals, their restrictions, obstructions, and unlooked for branches that probably would not be found in ordinary root-treatment and filling, and left, perhaps, as a harbour for bacteria, in which to multiply and cause subsequent trouble.

HEREDITY.

By Dr. BUMGARDNER.

The results of heredity are most commonly observed in normal peculiarities, by which we mean those not far removed from the ordinary. Under this head may be classified the colour of the eyes and hair, the general form of features and of the body—in fact, all those qualities which we recognize as belonging to temperament. The transmission of a number of these qualities makes what we call the “family resemblance.” We expect many of these characteristics to appear in the child, and their reproduction is a matter of such common observation that it would be superfluous to mention cases. But the law of heredity does not confine itself to copying these usual qualities. Instances of peculiar anatomical form and structure are common, and these deviations from the type are frequently transmitted through many generations, but they finally return to the original form and

evidence a strong undercurrent tending to preserve the form longest established. In the Colburn family sexdigitism was transmitted for four generations. Edward Lambert, the "porcupine man," had his body covered with horny excrescences and transmitted this peculiarity to his male descendants for five generations. M. De Marguay reported before the Surgical Society of Paris an instance in which one family presented eleven cases of hare-lip in three generations. So examples might be cited in regard to colour-blindness, tongue tie, club-foot, deafness and many other physical defects, and almost every conceivable condition, physical and psychological.

Western Dental Journal.

LIQUID SILEX.

By H. H. BURCHARD.

The solution known by this name, or as soluble glass, chemically the sodium silicate (Na_2SiO_3), is quite as effective a medium to prevent the adhesion of plaster to vulcanite as is tin foil, but certain precautions are necessary to procure the best results. The material should be kept in a moderately warm place, and tightly stoppered. As soon as its viscosity becomes greater than that of a thin syrup, throw it away and buy a new bottle. Should it lose its perfect clearness, discard it. We find that about one-third of the four-ounce bottles in which it is sold is useful; the remainder is usually so deteriorated as to be worthless. Dilution with hot water and warming the solution restores its appearance, but for dental purposes not its virtues. The model, after investment, and also the teeth and entire investment, are freed of adherent wax by pouring over them a stream of boiling water. The excess of water is absorbed by means of bibulous paper. As soon as the wet appearance disappears from the plaster it is ready to receive the silicate, not before.

A camel's-hair brush, having a fine point and no loose hairs, is dipped in the solution and the surplus wiped off the brush. The plaster surfaces, all of them, are painted lightly with the silex, carefully avoiding contact with the porcelain or platinum pins. By means of the fine point on the brush the matrix of the rim is painted between the teeth; in coating the cap

side of the investment much care is required to prevent touching the teeth. Small wisps of bibulous paper are quickly and gently passed over the painted surfaces till there is but a thin glaze covering every part of the plaster. The pieces should be set aside for at least fifteen minutes to permit thorough hardening of the silex. After vulcanizing, the flasks should not remain unopened over night, for if salt (sodium chlorid) has been used to hasten the setting of the investment, the surface of the vulcanized plate will be covered by a hard and tenacious gloss; if opened as soon as cold the plaster and silex part from the vulcanite, without even washing, leaving a smooth glazed surface equal to that found under tin foil.

The mechanic may be certain that the lack of good results is due to either carelessness or faulty silex.

This is an important matter, as unquestionably many or most of the ills attributed to the wearing of vulcanite plates are due to roughness on their palatal surfaces.

Cosmos.

DIPLOMA MILLS IN THE STATES.

By Dr. G. G. BROCK.

As a rule, entrance examinations for admission to dental colleges are simply a delusion and a snare. I had the pleasure of being present at an oral entrance examination, given by an officer in one of our university dental schools, to a man about forty-three years of age, who hailed from the most wild and wooly part of Kansas, where he had been serving humanity as a "cow puncher" and a tramp dentist alternately. He was asked two or three questions in elementary geography, none of which he could answer. He was asked what astronomy was, but he had never heard of it. He did not know the principles nor elements of arithmetic. He was admitted, on what qualification is a mystery. On one occasion he made the boast that he had shot his way out of more than one crowd, and his facial contour verified the statement. Yet he was placed on a level with those students who presented high grade teacher's certificates or diplomas from institutions of learning as evidence of an honest qualification to enter.

This case is, of course, an extreme one; but it is indicative.

What can be the motive of a school to admit such scapegrace ignoramuses? It cannot be for the benefit of the applicants, for the faculties know they will be dismal failures in dentistry. It cannot be to "raise the standard of our beloved profession," for these faculties would not have them around their offices to clean their spittoons.

We must conclude that the tuition fees within the pockets of such applicants are really the only qualifications necessary. Have our schools become circuses where the only qualification required is the ability to purchase tickets? It is not so much a question of what kind of men the schools are turning out, as what kind of men the schools are taking in. Writers may write, philosophers may philosophize, and casuists may give reasons; but not till this indiscriminate acceptance of applicants to dental colleges is abated may we expect the dental millennium to dawn and our calling take rank as an honorable profession.

Items of Interest.

THE CARE OF THE TEETH.

By A. R. DEACON, St. Louis.

The first process of digestion is the admixture of the food with saliva. This first step in the conversion of food into flesh and blood is important. The pleasure attending the sense of taste is doubtless given to ensure its proper performance.

If food is not well masticated the stomach cannot successfully perform the second stage of digestion, and the disastrous effects of malassimilation will soon be apparent, affecting in some degree the whole economy. Many dyspeptics and persons suffering from nervousness and despondency are really victims of malnutrition, caused by carelessness or inability to properly prepare their food for reception by the stomach.

Thus we see that good teeth are essential to proper mastication; and that, without them, the general health cannot be maintained. This truth is becoming appreciated by the general public. This is evidenced by the advance in dentistry during a few decades, from an humble art to one of the most exacting sciences.

The dentist's patient is not doing justice to the teeth in simply having them "put in good order" by the dentist. Visits to the dental office should be made at regular intervals, that all accumulations of tartar may be removed from the teeth, and any forming cavity promptly stopped: under these conditions a really painful operation will rarely, if ever, be necessary. It is well, though, that the patient should realize that even dental science without the co-operation of the patient is not enough. The careful and prompt removal of food from on and between the teeth is essential, for wherever there is fermentation and decomposition of organic matter there are innumerable colonies of disease germs, and these quickly become highly destructive to the parts.

In all probability a tooth kept perfectly clean will never decay. While it may be impossible to constantly keep the teeth entirely free from foreign matter in some stage of fermentation, frequent washing and cleansing will accomplish the result.

Items of Interest.

ON SOME UNUSUAL FORMS OF ABSCESS.

By Dr. HARLAN.

Lately we have been brought face to face with some unusual cases of abscess, unusual because the teeth that were pulpless gave rise to but one fistula. One of these came from a central and lateral incisor and another from both centrals and a lateral. The difficulty of diagnosis was on account of the fact that the fistule seemed to proceed from only one tooth and there was no apparent reason for supposing that the pulps were dead in the adjacent teeth. Even the electric light failed to prove that the pulps were dead. Recently a case that had passed through the hands of three competent dentists was presented, with an abscess from both roots of an inferior molar. After the roots were cleansed, sterilized and filled, the fistule—weeks afterward—had not closed. All of the root filling was removed and the treatment repeated, including the filling of the roots again but to no purpose. Upon testing the adjacent bicuspid the pulp was found dead and the fistule leading from it opened directly through the

other opposite the molar. The point we wish to make is that frequently pulps in adjacent teeth are dead without any visible external sign to guide the examiner. In all such cases a careful test of the teeth is necessary to positively cure the fistule which may be opposite the root of a tooth previously treated. It is apparent that any one might make a mistake and drill out the bony tissue around the apex of a root on the supposition that caries or necrosis was present, when a little careful search would prove that the adjacent tooth being pulpless was the cause of a fistule not closing up after a reasonable lapse of time.

Abscesses are more or less troublesome—alveolar abscesses—and he who thinks that all of them remain in a state of perfect salubrity after treatment is liable to be mistaken ten or fifteen years later, after a single sure shot treatment has been practised. Incomplete sterilization, and incomplete root filling are the barriers to success.

Dental Review.

ASBESTOS AS A SURGICAL DRESSING.

Dr. E. O'N. Kane, Pa., recommends asbestos as a practical and useful substance for surgical dressings. These dressings, he says, may be carried in any parcel, paper bag, or hand-satchel, may be handled by dirty hands, spattered by blood or any sort of filth, and yet can be rendered absolutely aseptic in less than two minutes by tossing them upon the coals, or into the blaze of an ordinary kitchen stove. After having completed an operation, and just before he is ready to apply the dressings, they are thrust into the coals or flame of the nearest stove. The same dressings can be used, if necessary, though here it is advisable to wash off some of the discharges before the dressings are burned. Repeated burnings seem to injure the quality of the material somewhat. The form of asbestos most used is the asbestos fibre, which is as soft as silk floss, and its absorbent qualities are greater than those of absorbent cotton. Asbestos wicking, packing, and cording are adapted for drainage tubes.

Medical Record.

Dental News.

THE DENTISTS BILL, N.S.W.

The Dentists Bill has passed the Upper House of the N.S. Wales Legislature, and is now before the Lower Chamber. This measure is, in our opinion, a good one. We have compared it with the Dentists Act of Great Britain, 1878, with a result favourable to the Bill.

There is no necessity for us to more than mention to our readers that an Act to provide for the education, examination, and registration of dentists is a necessary piece of legislation in any civilized community, and it is to be hoped that the reproach attaching to New South Wales as being one of the few large countries without a Dental Act will shortly be removed by the Legislative Assembly endorsing the action of the Council, and making the present Bill the law of the land. The science and art of dentistry are such now that for the public good those who are permitted by law to practise as dentists, should be persons whom the State considers well qualified for the work entrusted to them. The Bill under consideration has the admirable attributes of being brief and to the point, of being fairly liberal, and of not unduly interfering with existing rights. It contains nineteen sections—that is to say, it is less than half the size of the British Act, which contains forty sections.

Provision is made for the establishment of a Dental Board, a Registrar, the qualifications necessary for registration, the penalties to be inflicted upon unregistered persons using the terms that imply registration, also upon persons who commit frauds on the Act. Section 15 states, amongst other things, that the Board may make, alter, and repeal regulations for carrying the Act into full effect, and for prescribing what certificates, &c., will be recognised by the Board, and for holding examinations and prescribing the subjects and fees therefor. It is provided that the regulations of the Board be approved by the Governor, and that they be laid before both Houses of Parliament.

The first Dental Board will be a nominee body of eight members, two of whom must be registered medical practitioners, four of whom must be dentists who are qualified for registration under the Act, and two of whom must be persons

not medical practitioners or dentists. One of the eight is to be appointed President. This Board will continue in office for three years only. At the expiration of the three years the registered dentists will elect a Board according to regulations approved by the Governor. The elected Board will choose one of its number as President. At least five of the elected Board shall be dentists, and three shall be legally qualified medical practitioners.

The Bill, if passed into law, will come into force on January 1st, 1897, after which time no person other than a medical practitioner shall be entitled to take or use the name of dentist, or any name, etc., implying that he is registered under the Act, without being liable (as in Great Britain) to a penalty not exceeding twenty pounds. The portions, therefore, of the Bill that deal with the qualifications necessary for registration become important. The requirements for registration are almost identical with those of the British Act. In section 11 of the Bill they are stated as follows:—Any person who (a) is registered in the United Kingdom in accordance with the laws for the time being in force therein as a dentist or medical practitioner; or (b) is entitled as hereinafter mentioned to be registered under this Act as a dentist; or (c) has for a period of six months before the commencement of this Act been *bona fide* engaged in New South Wales in the practice of dentistry, either separately or in conjunction with the practice of medicine, surgery, or pharmacy, and who has made application for registration to the Board within one year from the commencement of this Act; or (d) has attained the age of twenty-one years, and has been engaged during a period of not less than four years in the acquirement of professional knowledge in dentistry, and has passed an examination before the Board according to the prescribed regulations; or (e) has attained the age of twenty-one years, and shall have been a pupil or an apprentice for a period of six months before the commencement of this Act; or (f) has obtained a diploma or degree in dentistry from a university in Australia; shall be entitled to be registered as a dentist under this Act. And in section 12:—Any person who has practised dentistry for not less than twelve months elsewhere than in New South Wales, and who holds some recognised certificate as hereinafter defined, and who proves to the satisfaction of the Board that he is of good character, shall be entitled upon the payment of the prescribed registration fees and without examination, to be registered as a

dentist under this Act. The term "recognised certificate" means a certificate, diploma, membership, degree, licence, letters, testimonial, or other title, status, or document granted by some university, college or other public institution in a British possession or foreign country and which is recognised by the Board as entitling the holder thereof to practise dentistry in such possession or country, and as furnishing sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of dentistry.

In our opinion it will be to the advantage of the public of New South Wales to have this measure upon the Statute Book of the colony. We are glad to see that the Bill has been introduced into Parliament by the Hon. W. J. Trickett, who is a well-known eminent member of the legal profession.

The authorities of the Sydney Hospital are making provision for the practical training of students in dentistry; and the Senate of the University of Sydney has referred to the Faculty of Medicine for report a proposal to establish a School of Dentistry in connection with the Medical School. The scheme provides for a full curriculum and a diploma in dental surgery.

The Australasian Medical Gazette.

DENTISTRY IN CANADA.

The following letter in the *Montreal Daily Witness* explains the resignation of Dr. Beers.

S. Globensky, L.D.S., D.D.S., Pres. Dentists' Association, Province of Quebec:

Dear Sir,—I beg to hand you my resignation as a member of the Board of Examiners of the D.A.P.A., and as Dean and Professor in the Dental College.

A very few of us have given more than the leisure of half a lifetime to legislative and educational efforts in the interest of the profession and the public. It is a work that has not been obtruded upon the public eye, or solicited the public purse, but it has been faithfully and unselfishly done all the same, and the public have got the benefit. Many who could find time from practice for all sorts of civil and social engagements, could spare little or none in the political or scientific interest of their profession, and the labour on the part of a few has not met with that co-operation which even the busiest

of men ought to give. From time to time, for the last twenty years, we have had so much fractious litigation and factional legislation, opposed on every occasion by the mischief-makers, who are to be found in all professions, that for my part, I am heartily sick of it, not only because of the selfishness of those who have brought it about; but almost as much because of the complacent indifference of those who are debtors to their profession quite as much as we are, and who, while careful to avoid the wounds of the warfare, were glad to get the benefits.

My chief reason I shall frankly avow. Some time ago, a so-called "assistant" in this city was convicted and fined in the Police Court for a certain breach of the dental law. His late employer is about to present a petition to the Legislature to have such illegality legalized, so that the public may have the questionable privilege of being served in the dentists' offices, as they are now served in the barbers', by "assistants," whose qualifications, in the case of foreigners and non-residents, are not to be tested by the Provincial Board. It is not only sought to obtain the right for the hired parties to act in the presence of, but also "in the absence of" the licensed practitioner, so that the dentist himself might altogether desert his practice, and under the cover of his licence, hand his patients over to a salaried assistant. It is also sought to obtain this right without any matriculation examination, and without exacting any of the obligations which for twenty years have been imposed upon our own registered students. In the interest of the work we have done in this province for so long a time for the better education of students and a better service to the public, I consider this movement the most dangerous of the several obstructive measures with which we have had to contend. If a licentiate has knowingly instigated the evasion and breach of the present law, it would surely be curious justice in Quebec, that would reward him by legalizing that which the Courts had proved to be illegal. It is a most ingenious idea of jurisprudence surely, that would make the crime of yesterday the prerogative of to-day; and if it could only be extended sufficiently in its application, by petition, it might even empty the penitentiaries. The legislation asked for on behalf of irresponsible assistants, would be an immediate damage to the French and English students of Quebec, who are now complying with the law, as well as to those of us who do not believe in the principle of handing over our patients to

assistants, who are unable or unwilling to submit to the requirements of the Provincial Board. It would open the way for fresh infractions. The men who stretched the interpretation of one law to its breach, would not hesitate to do it again. It would place the public at the mercy of a class upon whom the governing body of the profession have no check, and would exempt them from the penalties to which we, as established licentiates, are subject for certain unprofessional conduct. It would leave to the employer of these salaried assistants, even if he were a quack, or one who resorts to quack methods, the prerogative of judging qualifications for practice which the Legislature has, since 1868, confided exclusively to the elective Provincial Board.

It has been enacted for over twenty five years by the legislature that no one shall practise dentistry in Quebec in the way the petition implies, unless he has passed the required examinations, and it is now further compulsory that all applicants must attend the Dental College. I fail to see why these conditions should be imposed upon our own indentured students who have passed the severe matriculations, and completed the course, and withdrawn from those who are unwilling or unable to do so. In this question even the possession of a foreign diploma is well known to be no proof of a proper qualification. That is a well established fact in Quebec. If any dentist finds that his practice is too extensive or that he cannot himself do certain work, he may hire assistants to do it; or if he prefers trading horses to practising dentistry he should be influenced by the same ethical spirit which animates the medical and legal profession under the circumstances. Instead of paying a paltry salary to some impecunious assistant, he can get a skilled partner, or he can engage our own registered students, who are entitled to preference if anyone is to be engaged. It would be a remarkable thing in medical practice if a physician's patients were exposed in his office to transference to unlicensed practitioners. It is, within the limitations of dental practice, as dangerous in dentistry.

Moreover, in the case of a profession such as ours, which deals with dangerous poisons, and which by neglect or ignorance exposes its patrons to the consequences of unclean and ill-treatment, the public has a right to demand that assistants as well as registered students should submit their qualifications to proper test, not in Chicago or Hong Kong, but in the Province of Quebec.

These are my convictions. I am sure they cannot be acceptable to my confreres who have signed the petition, and as I find on the list of names those of several gentlemen with whom I am associated in the educational work of our province I take it for granted that my convictions in their opinions are wrong, and therefore I feel bound to resign. When I find it necessary to hire salaried assistants to do my business I shall resign practice too.

W. GEORGE BEERS, L.D.S. D.D.S.

Montreal, Oct. 26, 1896.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The following were the questions in the written portion of the recent Examination for Diploma in Dental Surgery :—

Anatomy and Physiology and Surgery.

2 to 4 o'clock, p.m.

N.B.—The Candidate is required to answer at least one of the two questions, both on Anatomy and Physiology, and on Surgery and Pathology.

Anatomy and Physiology.

1. Describe the dissection necessary to lay bare the superficial surface of the Masseter Muscle.

2. What is meant by the terms " Warm-blooded " and " Cold-blooded " as applied to animals? How is uniformity of temperature maintained in the former class?

Surgery and Pathology.

3. Give the causes, symptoms, and treatment of Erysipelas of the Face and Neck.

4. How do you distinguish between a Syphilitic Chancre and an Epithelioma of the Lip? Give the treatment and prognosis for each.

Dental Anatomy and Physiology and Dental Surgery.

5 to 8 p.m.

N.B.—The Candidate is required to answer at least two of three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Dental Anatomy and Physiology.

1. What is meant by Trituberculism? State the present views as to the development of the Mammalian Molar from a primitive type.

2. Compare Calcification in Dental Tissues with Ossification.

3. State the relative positions of the temporary and permanent teeth of the Upper Jaw at birth, and the extent to which calcification has proceeded.

Dental Surgery and Pathology.

1. Describe the microscopical appearances in a longitudinal and a transverse section, respectively, of a Carious Tooth. How would you prepare and stain such a preparation, and what stains would you employ.

2. What Dental lesions may give rise to closure of the Jaw? How would you diagnose and treat such cases, and what results might arise from neglect of treatment?

3. What causes acting before and after birth may modify the calcification of the Enamel? Describe the appearances produced.

A CORONER'S JURY ON UNQUALIFIED PRACTICE.

At the inquest on Sophia Louisa Holiday, who died at Battersea on August 31st, after being treated for cancer by an "American doctor" named Ferdinand, who, it was alleged, professed to be able to cure the disease, after five days' inquiry the verdict was arrived at that the deceased died from cancer, and the jury added the following as a rider :

"We agree that John Ferdinand's treatment of the deceased was of a bad and reckless nature, but we do not consider the evidence sufficient to prove him guilty of manslaughter. The jury, in regretfully recording this verdict, desire to earnestly direct the attention of the authorities to the impunity with which persons of apparently no education or medical skill can, by means of extensive advertising, promise cures of incurable diseases, and thus defraud the working classes, who have no facilities for investigating their qualifications, of large sums of money, and probably in some cases hasten death ; and the jury recommend most strongly that there should be some legislation giving the police power to interfere with such practices. The jury desire to add an appeal to the coroner to direct the attention of the police to the wilful perjury which John Ferdinand has committed in this court, and it is the jury's opinion that he has been guilty of obtaining money under false pretences."

British Medical Journal.

DEATH UNDER CHLOROFORM.

The borough coroner (Mr. W. H. Phillips) held an inquest, at the Bloomsbury Tavern, Pool Street, Wolverhampton, on November 2nd, touching the death of Isabella Jones (32), a widow and shopkeeper, late of Penn Read, who died after chloroform had been administered to her at the surgery of Mr. Owen, dentist, Darlington Street, on Saturday.

The body was identified by her brother, Arthur Jeavons, a merchant's clerk, of Lord Street, who said she had enjoyed good health with the exception that she had sometimes suffered from indigestion and had complained of swelling of the feet at night.

William G. Owen, L.D.S. Eng., a registered dentist, practising with his uncle, Mr. R. Owen, Darlington Street, said the deceased consulted him last Thursday with regard to some teeth being extracted. An appointment was made for Saturday, and, at her request, Dr. Nicklin, who had previously examined her, was present, and administered chloroform. After the deceased had been under the influence of the anæsthetic about ten minutes it was found that the breathing had stopped. Artificial respiration was resorted to, and witness and Dr. Nicklin tried for two hours to restore her, but failed. This was the first fatal case of the kind that had occurred during his experience as a dentist. He had been house-surgeon at the Dental Hospital, Birmingham, and had attended thousands of cases where patients had had chloroform administered.

Dr. Nicklin said that when he examined the deceased at Mr. Owen's surgery, he saw no reason why chloroform should not be administered, though he found that the heart was only beating feebly. After the deceased had been under the influence of the anæsthetic for ten minutes she went very pale and her eyes became dilated. She showed symptoms of syncope, but after witness had lowered her head the operation was proceeded with. He then noticed that breathing had stopped, and every effort was made to restore it, but death ensued.

Mr. Newnham, surgeon, who had made a post-mortem examination, said death was due to a weak heart and distended stomach, but a surgeon could not have detected any disease during life.

A verdict was returned in accordance with the medical evidence.

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

At the next Meeting on Friday, December 4th, Mr. Chas. W. Glassington has promised to read a paper on "The Poisons used in Dentistry, and their Antidotes."

MR. BANCROFT purposes devoting a great part of the winter to reading Dickens's *Christmas Carol* in the cause of charity, particularly on behalf of the great hospitals in London and the provinces. He hopes to continue these readings until he has visited all the principal towns in the United Kingdom, and in every case the entire receipts will be handed over to the authorities without deduction, except in payment of local charges, such as rent of building and cost of printing. Mr. Bancroft will commence his good work on November 23rd, in Queen's Hall, in aid of the cancer wards of Middlesex Hospital.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Dear Sir,—In an interesting paper on "Air Chambers," in your last number, by Dr. Haskell, Chicago. He mentions a case in which the plate was successfully submitted to the modest downward pressure of "a pail of water and other weights upon it." Well, that may be, I shall not dispute it.

But what I should like to know is, and this would have made the paper valuable, how much (or how little) pressure the plate was capable of bearing, without displacement, when applied to the cutting edge of the Central Incisor upwards.

I see this same plate would appear to have been the first suction plate made—1844—but by a curious coincidence, in an editorial note in the same Journal, p. 980, another American authority anti-dates the birth to 1800.

I wish Dr. Haskell lived a little nearer, I fancy I could oblige him with half-a-dozen cases that would vary the monotony, and temper the dazzling effect produced by twenty-five and apparently fifty years of practice where failure seemingly is unknown.

Yours obediently,

HUGH W. DEWES.

32, Harley Street, W.

P.S.—I notice another small paragraph in the same number, p. 998, containing wholesome advice. May I ask the Doctor if the water in that pail was pure, or *cum grano salis*, if so, how much?

To the Editor of the "British Journal of Dental Science."

Dear Sir,—I read with a good deal of interest the paper by Mr. Collett "On the Advisability of Inserting Dentures Immediately after Extraction in Certain Cases." The method was described some years ago at a Meeting at Edinburgh—I think it must have been by Mr. Macleod—as an entirely new method, whereas, in conjunction with Mr. E. Hutson, L.D.S.E., who was then assisting me, I had inserted teeth by this method for some three or four years.

My plan differs somewhat from that of Mr. Collett. I first of all very carefully remove all debris from the necks of teeth, and proceed to take an impression with perhaps more than ordinary care. I see to it that I have a well-defined impression of the necks of teeth and gum margins. I then roll a piece of sheet wax to the size of an ordinary lead pencil, cut pieces of the proper length and shape into Central, Lateral, or Canine Root as the case may require. *Having noticed the direction which the roots take in the mouth*, I carefully fit the wax roots into the impression of teeth to be extracted. When set in the usual way, and the composition removed, a well-nigh perfect plaster cast is the result, free from the many objections one could urge against the risky plan of "drilling" sockets in the plaster model.

Of course you will see from the foregoing that I always make the denture before extracting the teeth. My experience teaches me, that if the teeth are extracted one day, and the denture inserted the next, pain and discomfort is the result, beside being obliged in the majority of instances to unduly cut and maim the necks of teeth in order to make them fit a constricted socket.

I always advise a patient to remove the piece at least once a day, otherwise blood accumulates and becomes offensive.

The one disadvantage attaching to the method is, that, in course of time a space between teeth and gum may shew itself, but a few hours is generally sufficient to remedy this, it being simply needful to *carry back* or refit the necks of teeth.

Yours, etc.,

CHAS. GREENSLADE.

Brighton, Nov. 10. 1896.

Dental Hospital Report.

| | |
|--|------|
| WORK DONE at the Victoria Dental Hospital of Manchester, during the month of OCTOBER, 1896. | |
| Number of Patients attended | 869 |
| Number of Extractions | 619 |
| Number of Extractions under Anæsthetics | 177 |
| Gold Stoppings | 76 |
| Other Stoppings | 202 |
| Miscellaneous { advice, temporary fillings, scalings, dressings, &c. | 276 |
| Gold and Porcelain Crowns | 23 |
| Inlays | |
| Total | 1373 |

ERNST F. B. BEYER, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street W. A single number sent on receipt of seven (peny) stamps.

British Journal of Dental Science.

No. 693. LONDON, DEC. 1, 1896. Vol. XXXIX.

INAUGURAL ADDRESS.*

By ROBERT H. WOODHOUSE, M.R.C.S., L.S.A., L.D.S.Eng.

Gentlemen,—I need scarcely say how greatly I esteem the honour you have conferred upon me in my election as your President. The suggestion for my nomination came quite as a surprise, and it was with the utmost diffidence I could bring myself to undertake the duties of such a responsible post—I felt, in fact, like Cincinnatus called from the plough to be First Consul of the old Roman Republic ; but instead of coming, like him, in a time of difficulty to guide the affairs of State, I find that my predecessor has so judiciously conducted the work of the Society that there are no tangled skeins standing over from last Session to be unravelled.

If you will pardon a personal allusion, I may say that my election to this chair is coincident with my coming of age as a dental surgeon, and when my year of office closes, if all be well, I shall have attained the silver wedding of my union with the Royal College of Surgeons as a member. I may also mention that the Presidents of the years 1891-92, 1894-95 were students with me, at one and the same time, at the old Dental Hospital in Soho Square, and where at that time the meetings of the Odontological Society were held. Since then our Society has nearly doubled its membership,

* Delivered by the President of the Odontological Society of Great Britain.

and is now increasing at the average rate of ten members a year, our total numbers now being just over four hundred.

The fortieth anniversary, which we celebrate this year, is likely to be an important one in our history. In the present Session we must face the momentous question of our future domicile. Since its early days, when the meetings were held at 32, George Street, Hanover Square, the Odontological Society has been housed by the Dental Hospital of London, first in Soho Square, and since 1874 in its present quarters. Now that the Hospital is to be rebuilt on an adjoining site and on a larger scale, some change is inevitable. The accommodation we require is much greater than formerly, owing to the expansion of the Museum and Library, and allowance must be made for further growth in these departments, as well as for increase of membership.

I should like to see our Society a greater power than even it is in the dental world. Whilst never losing sight of its great ethical and scientific aims it ought to be so situated that its social character could be enhanced. Whether we may hope to continue our old alliance with the Dental Hospital in more commodious quarters, or have to trek further away, possibly to a greater centre of professional life, still remains an open question.

I am fortunate in being supported by a Council who can be well entrusted with a serious question of this kind, and who will, I know, spare no endeavours to watch and guard the best interests of the Society. Meanwhile, to make our present trysting place more comfortable, you will notice gas has been discarded and the electric light has been installed in its stead.

Since the last meeting of our Society in June the medical profession has had to mourn the loss of several of its leading members. Where so many have fallen it is difficult to specialize, but the passing away of two such men as Sir John

Erichsen and Sir George Humphrey from amongst our leading surgeons creates a blank that time alone can refill. Sir John Erichsen showed his interest in our branch of surgery in many ways, and was for several years Chairman of the Managing Committee of the Dental Hospital of London.

One bright event shone out amidst the surrounding gloom of this dark autumn, when, on September 23, our beloved sovereign's benignant reign exceeded in length that of any predecessor on the British, and, with one exception, of any European throne.

In the immense advance made during the Victorian era in scientific medicine and surgery, our branch of the healing art can claim a full share.

In every department we can note improvement, but to see it even more vividly portrayed, let us for a moment, without going into ancient history, glance into the condition of dental surgery in the latter part of the last century. Conservative dental surgery was then comparatively unknown or unpractised, although many operations connected with the teeth and oral cavity are described with much detail and ability by that astute odontologist, John Hunter. His writings well repay perusal and study, even in these days, when "of making many books there is no end."

Writing of caries in the year 1778, John Hunter says, "we have not as yet found any means of preventing this disease or curing it. All that can be done is to fill the hole with lead, which prevents the pain and retards the decay, but after the tooth is broken this is not practicable." From this we gather that John Hunter had no opinion of contour fillings, to say nothing of gold crowns. His estimate of the dentist of his day was sadly low, for he says in his introduction—"I shall purposely avoid entering into common surgery, nor to lead the dentist beyond his depth and to matters

of which it is to be supposed he has not acquired a competent knowledge."

It is by looking back to a condition of things like this that we can best estimate the enormous strides that have been made. In the onward march of events it must in justice to our transatlantic brethren be said that it was in the United States that a systematic training was first organised and diplomas granted in dental surgery.

The first dental college was opened in Baltimore, and I well recollect, at the International Medical Congress at Washington in 1887, meeting a fine old gentleman who was the possessor of the oldest dental diploma in existence, and if I rightly remember, the second that was ever granted.

Although our American *confrères* were thus a few years in advance of us in this matter, we have now, I feel, more than overtaken them. Our educational system is on a much more satisfactory basis than obtains in America, where the regulations for granting diplomas and standards of examination vary so much in the different States, besides lacking the control of a central authority.

By guarding the entrance to our profession by an examination in Arts, and by such systematic and detailed examinations for the minimum qualification as have been newly authorised by the College of Surgeons, we look forward to the future with hope and confidence. In the past there were men of good position and scientific attainments, or this Society could not have come into existence. There were indeed giants in those days. It is, however, no disparagement of them to say that they can be equalled to-day, and behind these is a strong and ever-increasing body of well-educated and skilful practitioners. It is, after all, to the rank and file of an army that its real efficiency is due.

Not only in Great Britain but throughout her Colonies and Dependencies, and notably just now in New South

Wales, do we see minds astir in the question of dental reform. These newer communities have the great advantage in dental, as in other reforms, of profiting by the experience and mistakes made by the older country.

Although we have such enormous advantages over our predecessors in every form of appliance and treatment, there is the sad fact before us that we have to deal with deteriorating structures, and it is to efficiently grapple with this condition that all our energies and resources are called into play.

I have, however, been much struck by the fact that we can often regard caries as a transitory condition, and even the virulent or phagedænic form—which in young mouths well nigh drives us to despair—to a great extent ceases after puberty, when, if judicious treatment has been adopted, the strengthening forces of nature come to aid the dental surgeon in his apparently hopeless task.

What the Copernican system of astronomy was to the old Ptolemaic, so the science of bacteriology has been in shedding light on much that was dark and inexplicable before its study happily dawned on humanity. It has revolutionised general surgical treatment, and our branch of the healing art feels the full force of the wave. Antisepsis and prophylactic treatment based on its investigation have aided us materially, and fortunately this knowledge is not limited to professional circles. The general public is becoming more and more alive to the importance of having the guidance of the dental surgeon from the first dentition. When parents realise that neglect of their children's teeth up to fourteen or fifteen years of age too often means ruin as to their future comfort, health and appearance, much will have been gained.

This year being the jubilee of the introduction of anæsthetics, I should like to make some brief allusion to them. It is but just to say that, collectively, anæsthetics presents the greatest boon that modern discovery has conferred on

mankind: by their use our profession is shorn of many of its terrors, and sooner or later we each personally are pretty sure to rejoice in this wonderful discovery.

The fact that sulphuric ether could produce insensibility was shown by the American physician, Godwin in 1822, but it was first used to prevent the pain of a surgical operation in October, 1846, by Dr. Morton a dentist in Brighton. The news of his success reached England on December 17 of the same year, and on the 22nd Mr. Robinson, a dentist, and Mr. Liston, the eminent surgeon, operated on patients rendered insensible by the inhalation of sulphuric ether. In the following year chloroform, that most valuable contribution of chemical science to suffering humanity, was brought into prominent notice as an anæsthetic by Sir James Simpson in Edinburgh.

Our excellent friend, nitrous oxide, antedates all other anæsthetics, having been discovered by Priestley in 1772. There is no record, I believe, of its use for dental operations till 1844, when Horace Wells demonstrated its value.

In speaking of these invaluable allies, I cannot but express the hope that ere long a Legislature that so rightly protects dumb animals from needless suffering, will make the production of narcosis in human beings, save in qualified hands, a penal offence.

I wish that I could say as much for local as for general anæsthetics; in these there is still a great deal to be desired—although great things are often promised.

Cataphoresis is now raising hopes, but any method requiring a length of time for its adaptation tends to increase the nerve tension of the patient, and so discounts its value. It is, however, fondly to be hoped that this age, so prolific in discovery, may ere long find some local obtunding agent without the many objections of most of those we at present are acquainted with.

Last December the scientific world was electrified by the discovery of the Roentgen rays. By these we can literally see that "coming events cast their shadows before," for unerupted teeth can, in a good skiagram in the lower jaw, at all events, be shown in perfect relation to surrounding parts.

It struck me in observing this that possibly it might influence our decision when hesitating as to the removal of retained temporary teeth with the hope of permanent successors taking their place, as well as in other ways.

The charge of monotony and narrowness has sometimes been levelled against our work, but the validity of such a charge entirely depends upon the spirit in which that work is done. There is ample scope for the accurate observer to note facts and form deductions as to the laws of health, heredity, and disease as applied to our vocation.

The busy man is often at a disadvantage in this respect, for, unless endowed with a retentive memory and power of marshalling facts, he often misses much that a more leisurely employed colleague may gather from his experiences.

It is to Societies like our own that the codification of incidents in practice is greatly due, and so a mass of experience is being accumulated for the guidance and benefit of a future generation.

We live in such an age of luxury, or "you press the button and we do the rest" existence, that individual resource is apt to be dwarfed, and perhaps latent talent undeveloped, by having so many things made ready to our hand. It has however, the advantage of effecting a great economy of time, and so enabling us to concentrate our thoughts on the more scientific aspect of our work, and at the same time giving us greater opportunities for recreation.

Engaged as we are in constant operations on vital tissues, and generally in a circumscribed space, regard to personal health is absolutely essential. Without this, signs of fatigue

will soon be revealed, followed possibly by a premature breakdown.

Of late years we have seen a rapid multiplication of medical Societies of all kinds. The ever widening field of knowledge accounts for this, and specialists like ourselves gain much by the close interchange of ideas thus afforded.

A society ought to be the means of confessing failure as well as of recording success. As I saw it well expressed in a recent medical journal, "it is certain that in the long run we hesitate to believe in the man who always believes in himself, and he who begins by publishing nothing but his success may end by having nothing to publish."

In looking back through the Transactions of our Society it is noticeable how the discussions have broadened out, and many more take part in them than formerly. This is as it should be, as nothing is more gratifying to the author of a paper or more generally helpful, than evoking a good discussion.

With all our professional progress there is around us an immense deal to deplore, and which grieves the spirit of every right-minded man; but time, that impartial eliminator, will banish much of this. The blatant quack and mendacious charlatan will vanish midst protective laws and the enlightenment of a better education.

The Roman Quadrata we see to-day will give place to a Roma Imperialis of the future. Then will be seen the full fruition of a movement fraught with immense benefit to mankind, and in which our Society has done much, but as yet has reaped only the first-fruits.

I am glad to say our secretaries have the promise of some excellent papers during the coming session, and I may remind you, gentlemen, how much pleasure and profit is derived from casual communications; I therefore ask you to keep this list as full as possible.

Gentlemen, I must again thank you for the great and undeserved honour you have bestowed upon me. I can assure you that no effort of mine will be wanting to justify your trust, and to sustain the best traditions of the Odontological Society.

GINGIVAL INJECTION FOR TOOTH EXTRACTION.

Analysis of a Thesis by Dr. Quéré, of Bordeaux.

Translated by WM. RUSHTON, L.D.S. Eng.

During his two years of dental study, Dr. Quéré had been struck by the variation in intensity of the pain experienced by different subjects during the extraction of a tooth after the gum had been injected with a local anæsthetic. He was therefore induced to endeavour to solve the following questions :—

1st. What are the factors producing pain in tooth extraction ?

2nd. Is it possible to abolish this pain, or at least to greatly lessen it by injections into the gum, and if so, what is the best means of procedure to obtain the maximum effect of the anæsthetic employed ?

3rd. Is there any local anæsthetic which, without exposing the patient to any risk, will give results sufficiently satisfactory to warrant its use in dental surgery ?

In reply to the first question, Dr. Quéré, in addition to the physical factors of pain, (namely the penetration of the forceps, the loosening of the tooth, and its removal) lays stress upon the psychical factor of pain. This psychical factor is so considerable that it often produces a fainting attack before an extraction, this faintness being solely due to terror experienced by the patient. As regards the second question, in

using the intra-gingival injection, Dr. Quéré insists on this precaution, "That it is necessary that considerable resistance to the injection should be felt by the operator during injection." Numerous experiments convince him that one only obtains anæsthesia in proportion to the resistance felt during injection—*whatever the anæsthetic employed*. This resistance produces a considerable ischæmia (bloodlessness) of the gum, this ischæmia being a valuable aid to anæsthesia of the part.

When the gum is injected in this manner, it is possible to obtain anæsthesia of the *gum*, but the author declares that no matter what anæsthetic is used, *complete* anæsthesia is never produced, for the operation of tooth extraction. According to him it is impossible that a *local* anæsthetic which by its very definition (and experience justifies its definition) only acts on the parts which it touches, can anæsthetize the vasculo-nervous tissues which extend between the bone and the tooth. Anatomically those tissues are independent of the gum; it is then absolutely impossible that an injection made in the gum can anæsthetize these tissues. Dr. Quéré therefore insists on this fact that no one can attribute to any anæsthetic the power of abolishing all pain in tooth extraction.

There are cases in which no pain has been felt during tooth extraction following an injection into the gum, but these are in neurotic subjects who already possessed anæsthesia of the maxillaries, or who were the subjects of suggestion. Suggestion can even go further, and the patient may be oblivious of any operation having been performed at all.

Local anæsthetics in dental surgery act to a considerable extent upon the *morale* of patients, and the operator should always seek to utilize this moral influence. He should always induce the patient to believe that the injection which has made the gum insensitive, will also make all pain of the extraction vanish.

What are the substances then which can be most strongly

recommended for producing anæsthesia in dental practice? Dr. Quéré has successively experimented on sterilized water, sterilized oil, Theobromine, Caffeine, Antipyrine, Cocaine in different forms, Eucaïn and Guaiacol. To compare the anaglesic value of these substances, the author has always injected them into the skin before injecting them into the gum. He thinks in fact that the skin is the criterion of local anæsthesia. The result of his experiments is, that sterilized water never produces anæsthesia; sterilized oil sometimes gives a certain amount of local anæsthesia due to ischœmia. Theobromine, Caffeine, and Antipyrine give an anæsthesia sometimes pretty considerable in the skin. The most important experiments were with cocaine and guaiacol. The conclusions Dr. Quéré arrives at are (1) that cocaine is much more dangerous in dental surgery than when used in any other operation, and (2) that it cannot produce any anæsthesia in more than 80 per cent. of cases of tooth extraction. He therefore comes to the conclusion that cocaine is not to be recommended, as the risks are great and the chances of obtaining anæsthesia small. (3) The substances derived from cocaine, such as eucaïne and tropacocaine are no better than cocaine. (4) That cocainised oil and cocaine solution used warm are in no way superior to the same strength of aqueous solution or when used cold. The experiments on guaiacol are not yet concluded, but after having made forty experiments the author draws the following conclusions—(1) Solutions of guaiacol in oil, one per cent. injected into the skin give about the same anæsthesia as that of a similar preparation of cocaine; (2) The injections do not cause pain; (3) In injecting into the gum they give about the same anæsthesia as cocaine; (4) These guaiacol injections are absolutely harmless. In his hands they have never produced the least scar.

Guaiacol appears then in Dr. Quéré's experience to be

better than cocaine in dental surgery, since in equal doses it gives results equal, if not superior to it, without letting the patient run the least risk.

A PLATE AND OBTURATOR IN ONE.

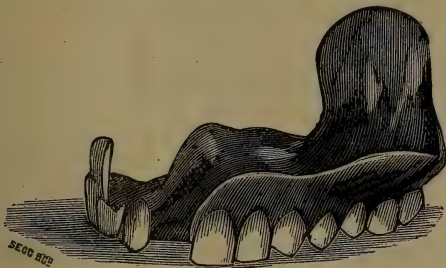
By J. B. KENNEDY, L.D.S.Eng.

A gentleman, (Mr. E.) called some few months since and asked for advice respecting a swelling and painful spot at the extreme angle of the upper jaw on the left side. He appeared to be in great pain and was much run down from want of sleep, he blamed a badly fitting plate for his trouble, but I think without cause, as the trouble was beyond the plate. On examination I found a growth about the size of a shilling which had a very malignant appearance, and after consulta-

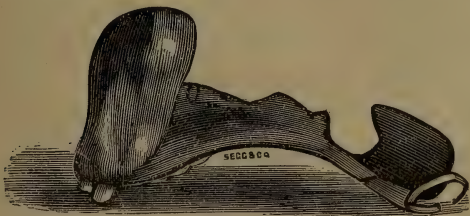


tion with his local medical adviser it was decided to send him to London for further advice. Ultimately an operation was performed which removed the antrum portion of the superior maxillary bone on that side and opened into the inferior and middle meatus, rendering speech most difficult, in fact hardly

intelligible, and drinking was only accomplished by holding his head back and allowing fluids to run down the throat. He made a splendid recovery and I saw him a month after the operation, the surgeon being wishful that something should be



made that would help his speech and make him more comfortable when drinking. The first difficulty encountered was getting a good impression as he could not bear plaster in his mouth, though I tried three or four times and failed each time. I then decided to try with "Godiva" which I left in the mouth nearly ten minutes to allow the thick part of the "Composition" which was forced into the cavity of the meatus to become well set, and succeeded in getting a good impression. I then proceeded to make my plate, which is of vulcanite with 12 teeth attached. Having bent the wax up to model and arranged teeth to bite, I flaked the whole, teeth upwards. The next difficulty which presented itself was how to fill the



hollow or obturator part of the plate without making it solid, and thus adding weight which was to be avoided. By cutting

a sheet of "Whalebone" rubber (of which the whole plate was made), and coaxing it in to fit the depression in the model, a few drops of spirits of wine were dropped in, and one thickness of rubber to cover it like a lid, the case was ready for the vulcanizer, which was allowed to get up very slowly, and vulcanized for $2\frac{1}{2}$ hours, and finished in the usual way. The success on putting the plate in was quite wonderful and surpassed our expectations, the patient being able to speak and drink as if nothing whatever had been the matter with him. The plate and teeth weighed exactly 17 dwts. I have seen the patient twice a week for a month, to make sure there was no pressure anywhere and he is deeply grateful for the comfort and help the plate is to him.

NON-ACTINIC RAYS AND SMALL-POX.

Not a few scoffs have been levelled at old John de Gaddesden, a physician of the Fourteenth Century, for his words concerning small-pox. "If you have small pox," wrote he, "wrap yourself in scarlet cloth, and let your bed-hangings also be scarlet. This is an excellent cure. It was in this manner that I treated the son of the noble King of England, and I cured him without leaving any marks." It so happens that modern science has just vindicated the empirical wisdom of its professional ancestor. Dr. Finsen, of Copenhagen, has shown that it is the so-called chemical rays of the sun, and not the heat rays, which produce irritation of the skin, and that these rays can be intercepted by red glass, or by any other red medium. Experimenting from this basis, Dr. Finsen found, even as did Dr. de Gaddesden, that small-pox patients treated in rooms with red glass windows almost invariably recovered without pitting or marking.

Medical Times.

British Journal of Dental Science.

LONDON, DEC. 1, 1896.

THE ONE-MAN COMPANY.

In an Editorial article published in this JOURNAL at the beginning of the year we drew attention to the working of the Companies' Acts, remarking on "the difficulty of legislating for the benefit of the Public at large, without at the same time providing opportunities for unscrupulous people to evade the law." We pointed out that the intention of the legislature was to encourage trade by allowing a small number of persons—not less than seven—to carry on business with a limited joint stock or capital, and without the risk of liability beyond the risk of the joint capital. We showed that the result of this legislation was to bring a large amount of foreign capital and business into this country to its corresponding commercial advantage, and consequently any attempt to interfere with present arrangements must be carried out with care. At the same time we stated emphatically that some change seemed necessary, as "a person who is prevented by law from doing a certain thing as an individual, seems to be able by calling half a dozen of his friends and neighbours to his assistance to form a Company and make everything comfortable." And in the event of the promoter having anything to sell he may dispose of it to the Company, and future creditors are left to sue the Company for what it is worth, whilst the promoter is safe. We held out hope, however, that the judgment of Mr. Justice VAUGHAN WILLIAMS, confirmed on appeal, would have the effect of discouraging such Company formation. Unfortunately last month the judgment of Mr. Justice WILLIAMS has been reversed on appeal to the House of Lords, and the one-man Company seems to be given a fresh lease of life.

Mr. JUSTICE WILLIAMS ruled that the Company was the agent of the man, and that the latter was responsible for its acts. The new decision rules that the Company is not the agent of the man, in fact has nothing whatever to do with his individuality, and that he is not responsible for it in any way, as the Act gave it a legal existence with rights and liabilities of its own.

As the law stand at present then, any man by getting a few of his relations together may defy Acts of Parliament framed for the protection of the public, by forming himself—so to speak—into a one-man Company, the one man not being involved in any individual responsibility for the acts of the Company. The Company, not being “a person” within the meaning of the acts of Parliament, the Medical, Dental, and Pharmaceutical Acts are in a fair way of being set at defiance. A few weeks ago we pointed out the fact that the *Chemist and Druggist* wished to place its own construction on the Dentists’ Act in favour of chemists who illegally held themselves out to be specially qualified to practise dentistry. What with this attack, and the recent decision concerning Companies, the Dentist’s Act would seem to be in danger of becoming a dead letter, and the unqualified and unprincipled adventurer has the way smoothed in his competition with the man who has laboriously trodden in the straight and narrow way of professional curriculum and professional uprightness. The *Standard* in a leader upon the decision says, “The machinery of Company law administration has proved itself of late years to be amply capable of detecting fraud in Company business, under whatever forms or devices it may attempt to find a shelter. There is no reason to apprehend that it will be less efficient in the future. If it should fail at any point, the Legislature can readily amend and strengthen it.” This may be so from the purely commercial standpoint, but when the Companies’ Act was framed, there was no idea that the just rights of professions would be over-ridden by the spirit of commercialism. The law requires amendment. It certainly has failed as regards the professions enumerated, and the Legislature has recognized the fact. We are glad to say

that in response to a report issued by a Departmental Committee last year appointed by the Board of Trade to consider the amendment of the Companies' Acts, a Bill to amend the Acts in some particulars will shortly be brought before Parliament. The Committee suggested that if it be shown that any Company was formed for the purpose of carrying on any business for a fraudulent or illegal purpose, or for the purpose of defeating any Act of Parliament, it may forthwith be wound up, and that in such case, the Attorney General shall have power to petition. The sooner the law is amended the better, for the number of these fraudulent Companies is increasing at an alarming rate.

DOWN WITH SHOW-CASES.—Those who wish to elevate the profession would like to see all show-cases of artificial teeth removed, and we think they are quite right. But it was no such professional motive which prompted Mr. Robert Marshall, described as a sawyer's mate, to remove a show-case from the front garden of Mr. Roger, a dentist of Camberwell. A lack of funds seems to have been the mainspring of Mr. Marshall's action, as is proved by the fact that he disposed of the teeth to a dealer in Petticoat Lane. He will be able for seven days to compare the economic problem of the difference between buying and selling, as he only received seven shillings for what the owner valued at five pounds.

THE STANDARD OF EXAMINATION.—According to the *Canadian Gazette*—"Dr. Beers has resigned his position as a member of the Board of Examiners of the Province of Quebec Dental Association, as a protest against a petition which has been in circulation to change the law which does not allow those who have passed the examinations in other Provinces or countries qualifying them for the profession of dentist to practise in Quebec without first convincing the the Examining Board of their qualifications." We certainly do not see why one province or country which has adopted a high standard for its examinations should admit holders of

diplomas, possibly inferior, to practise without undergoing a test as to their capabilities and knowledge. If the diploma they hold is a guarantee of good professional education, the test examination ought to be passed with little trouble ; if on the contrary, there is all the more reason why it should be held as a safeguard to the public and the profession. Until all examinations are held and standardized by the State, we consider these test examinations highly necessary.

THE JUBILEE OF ANÆSTHESIA.—In connection with the Jubilee at Boston, we may remind our readers that the use of ether as an anæsthetic was made just fifty years ago by a young dentist in Boston, U.S.A., of the name of Morton. Shortly afterwards Sir James Simpson made known to the world the anæsthetic properties of chloroform. Afterwards the value of nitrous oxide, for like purposes, was discovered by another American, named Wells. It would be impossible to think of any discoveries which have been a greater blessing to mankind than these. The agonies endured by those who were subjected to surgical operations when there was nothing which was of value for the alleviation of the torture, are beyond all imagination. Dr. George Wilson, who suffered the amputation of a limb, wrote, in a letter to a friend : "Suffering so great as I underwent cannot be expressed in words, and thus fortunately cannot be recalled. The particular pangs are now forgotten, but the black whirlwind of emotion, the hour of great darkness, and the sense of desertion by God and man, which swept through my mind and overwhelmed my heart, I can never forget, however gladly I would do so." There may be danger associated with the use of ether and chloroform and the ideal anæsthetic has yet to be discovered ; nevertheless the discoveries of Bell and Simpson have lightened the sense of human suffering to an extent not only beyond expression, but beyond imagination. Truly, as Oliver Wendell Holmes wrote, concerning the discovery of ether : "The fierce

extremity of suffering has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed for ever."

SUICIDE BY TAKING COCAINE.—An inquest was held on Nov. 19th, on the body of a woman aged twenty two, the wife of a wealthy American gentleman. From the evidence it appears that the deceased had suffered very much from toothache and neuralgia for which the medical man had prescribed quinine and other remedies. On the 14th she was taking tea with her doctor when she suddenly complained of intense toothache. He took her to his surgery and placed some crystals of cocaine in her tooth, putting back the cocaine into the drawer he had taken it from. He did not see her again until he was sent for to the Hotel Cecil, where he was horrified to find she had abstracted the cocaine bottle, and had taken its contents, some fifty grains, causing death. The jury, after a short deliberation, returned a verdict of suicide during a fit of temporary insanity. We cannot understand how a person possessed of wealth should have allowed her teeth to become a source of such continual torture as appears evident! A caution also is needed when dealing with patients, to see that dangerous drugs are placed securely out of their way.

TOOTHACHE AND EDUCATION.—The excuses made by parents for not sending their children to the Board School are varied and ingenious. Some are hard cases but many seem to be the fault of parents who are idle and drunken or who send their children to work before the proper age. In an amusing sketch in the *Daily News* the following interview between the magistrate and the parent is portrayed :—

"Mrs. Rickard—"

"Please, sir, my boy suffers dreadful from the toothache—" in a perfect torrent the good lady sobbed out the words—"oh! it's true—arsk the ossifer—the gentleman what is in the witness box—ain't you seen 'im with his face swolled and wropped up?—aye! many a times—it's n

use him sayin' he ain't, your worship, what can I do with a boy like that? Why, when I do send 'im they sends 'im back agin—yes, sir, they does. Why? 'Cos he cries so much with the pain, pore little fellar. Fair hollers! 'Ow can he do 'ritin' and sums in that state? It's not only hisself, but he makes sich a noise that the other children can't do their lessons. What! ain't I tellin' the gawspel truth? (The witness was smiling)."

This providential pause enabled the magistrate to ask a most impertinent question.

"But Mrs. Rickard—why don't you have the boy's tooth taken out?" he said, softly. "It will surely hurt him much less now than in a year's time—when it will be bigger or more decayed?"

"Very well, sir; if you thinks so," said Mrs. Rickard, with a curtsy

But Mrs. Rickard's impudence was quickly nipped in the bud.

"Half-a-crown," said the magistrate, quietly, as if he wished to break the fact gently.

"Half-a-crown! Well, I'll keep you waitin' for it."

Then Mrs. Rickard flounced out of the court—and bang went the door. Luckily it swings, or she would certainly have done herself a severe injury.

I may mention here that the money is collected in "dribs and drabs" as the saying is.

FORTUNE IN A DEER'S TOOTH.—The old tale of "Eyes and No Eyes" told in the "Sandford and Merton" of a past generation, conveys a useful lesson. We all know how the two little boys went a walk together, and upon their return one had seen nothing worthy of remark, while the other was brimful of the most instructive observations and experiences couched in faultless diction. Whether "Professor" Dixon, a taxidermist, of Kansas City, had perused this tale we do not know, but he certainly acted up to the moral conveyed by it. It seems that the Earl of Tankerville while hunting in the Wild West, shot a deer whose head he sent on to Dixon to be mounted. While the latter was preparing the head he noticed a yellow incrustation on the Teeth which proved to be gold dust. He found out where the stag was shot, and examined the "licks" frequented by the deer in the neighbourhood, and now we suppose he will become—as is generally the case in those journalistic stories—rich beyond the dreams of avarice.

OBITUARY.

SIR BENJAMIN WARD RICHARDSON, M.D., F.R.S.

Almost coincident with the Jubilee of Anæsthesia in America, occurred the death of one of the most eager and painstaking of investigators into its domain.

Sir Benjamin Richardson was born at Somerby, in the county of Leicester, in 1828, and took the degree of M.D. at the University of St. Andrews, in 1854.

At first engaged in general practice at Barnes, he turned his attention to the investigation of cholera, then epidemic in England in 1853 and 1854, but finding that the duties of general practice were too exacting to allow him to pursue the medical and physiological researches in which he delighted, he removed to London and started in consulting practice, towards which end his obtaining the Astley Cooper Prize of £300, for the best essay on the coagulation of the blood materially helped. His life became one of intense professional and literary activity, and his house became the rendezvous of medical men, to whom he communicated the results of his experiments or discussed the medical problems of the day. He turned his attention to anæsthetics and experimented on many substances, hoping to find something superior to chloroform. The bichloride of methylene was the outcome of these labours, though this has not found lasting favour with the profession. We are however, indebted to him for the idea of freezing tissues to be operated upon by means of ether spray, now abandoned in favour of chloride of ethyl and other more volatile fluids. Ethylate of sodium was also introduced by him, and his investigations into the uses of nitrite of amyl, were of a most useful character. As cataphorosis has lately caused a good deal of stir, we may say that Sir Benjamin Richardson as long ago as 1859, experimented most successfully with this method for tooth extraction, but it seemed to have fallen into desuetude. In connection with this, the following extract from the *Medical News* of July 1859, will be of interest.

“*On Voltaic Narcotism.* By B. W. RICHARDSON, M.D.
—On February 4, Mr. Kempton. of Princess Street, Hanover

square, gave me an opportunity of trying this narcotic system in a case of tooth extraction. The tooth was the last upper left molar, and very firm. It was hollow externally, and the cavity admitted of being easily filled with a dossil of lint, steeped in a narcotic solution composed of five minims each of tincture of aconite and chloroform. Mr. Kempton, after introducing the narcotic, connected a fine excavator with the positive pole of the battery, and with the point of the excavator pressed on the lint, while I placed the negative pole, tipped with moistened sponge, externally, immediately below the lobe of the left ear. Our apparatus being imperfect for the purpose, and the application of the poles being dependent on the hands, contact was sometimes broken, and occasional slight shocks were given, of which the patient has since complained. These were accidental, and avoidable in another case. After an application of five minutes I removed the poles, and we found that a sensation of numbness had commenced in the tooth, and extended superiorly and laterally from the tooth as a centre. A new dossil of lint, again saturated with narcotic solution, was inserted in the tooth, and the poles reapplied. In two or three minutes, the sensation of shock was not felt—even when contact was intentionally broken. After seven minutes, the poles were removed, and Mr. Kempton extracted the tooth without the patient experiencing the slightest sensation. He explained that he could hear the breakage between the tooth and its socket, but without the merest trace of pain."

Sir Benjamin Richardson was not a scientist of the first rank. He was rather an investigator from the practical utilitarian and humanitarian point of view. Whether he was advocating total abstinence, physical exercise, improved sanitation, better methods of slaughtering animals for food or for necessity, his aim was always the same; the relief of suffering and the advancement of the happiness of mankind. At one period of his career he found time even for politics, and cherished a hope of entering Parliament as an advanced reformer; but this hope, perhaps happily for him, was never realized. He received the honour of knighthood in 1893, and, among other distinctions, was a Fellow of the Royal Society, of the Society of Antiquaries, of the Royal College of Physicians of London, and of the Faculty of Physicians and Surgeons of Glasgow. He was M.A., M.D., and LL.D. of St. Andrew's, Fothergillian gold medallist, and

past President of the Medical Society of London, president (for 32 consecutive years) of the St. Andrews Graduates Association, president of the Medical Temperance Association, and of the Society of Sanitary Inspectors, and honorary physician to the London Temperance Hospital, the Royal Literary Fund, the Newspaper Press Fund, and the Society of Schoolmasters. Perhaps the most remarkable distinction which fell to his lot was being presented with a fine microscope and a purse of 1,000 guineas as a result of a subscription among members of his own profession, in recognition of the character and extent of his labours for the improvement of scientific medicine. He was Consulting Physician to the National Dental Hospital, in the welfare of which Institution he always took a warm interest, and comparatively recently he took the chair at its Annual Dinner.

Sir Benjamin leaves a widow, and two sons and a daughter. By his expressed wish the body will be cremated.

WHAT IS THE POSSIBLE MINIMUM DEATH RATE?

The late Dr. Parkes fixed 17 per 1,000 as the "mortality incident to human nature," and in his time—the infancy of hygiene and sanitation—even that figure seemed Utopian. But what shall it be now fixed at in view of the reduced rate in Greater London? In 1894 the death rate had fallen from 20·5 for the decennium, 1881-90, to 17·7 per 1000 ; and last year, 1895, when the mean was 19·7, there were sanitary areas in the great metropolis with the following figures : Wandsworth, 14·8 ; Lee, 14·5 ; Lewisham, 14·4 ; Stoke Newington, 13·4, and Hampstead, 12.

Dental Register.

The censors of Turkey prohibit the importation of all educational books, this state of affairs being brought about by the discovery in one book of the formula H_2O , which the wise men of the court interpreted to mean : "Hamid II, is naught—a cipher—a nobody."

Abstracts of British & Foreign Journals.

THE FRINGES OF DISEASE.

By Dr. JAMES F. GOODHART.

Take, now, another quarter of the fringe of disease. The other day a dental surgeon sent me a patient with receding gums. He was reported to have said that there was too much acid in the system and that the patient must see a physician, for which I thank him. But when she came to me, oh, how I wished I were other than I am—that I were a man who could be satisfied with that view of the question, and could set to work with good heart, or better, *good conscience*, to neutralize the acid by its equivalent of alkali. Ah, that equivalent! I daresay many of you have heard the late Mr. Corney Grain on the fashionable physician; how, as part of his dietetic treatment, he had been ordered to take a tenderly dressed mutton chop *or its equivalent*, and how he had been tearing about the town and worrying all his friends to find out what is the equivalent of a tenderly dressed mutton chop. And what is the equivalent of receding gums? I have worried over it for years and yet have no idea. I think it goes with dreaming sleep; with the grinding of the teeth in sleep; perhaps with cramp. It is easy enough to say it is due to acidity. But is it? Is it? It is, alas, a fringe of disease that no garment seems to match. There are many other affections of the teeth, too, that we do not know much about. There are the ground down teeth with tableland tops. These have been called gouty, and I think they are more often found in people of that habit. Then there is a condition of brittleness of the teeth—a good-looking tooth that will suddenly crack and go to pieces in a week or two. Then there are some whose teeth will ache and decay; and there are others whose teeth decay and never ache. There are cases of extreme decay in children that we assume to be due to ill health of some sort, but of what sort it would be difficult to say precisely. And going with the teeth; one may just mention the nails to say what an instructive fringe of disease is there. Only a few days ago I saw a man who had lost all

his finger nails, apparently by an aggressive action of some part of the matrix that had grown up and buried them. What was it? But while I am on the subject of the teeth there is another ailment of the mouth that one meets with from time to time and which I should be only too glad to know more about both as to its cause and the best means of treating it. I allude to ulcerative stomatitis in the adult. Ulcerative stomatitis in the child and in the adult are quite different things, for while in the child it is easily cured I doubt if anything has much effect in the adult in the form I have in mind. It crops up periodically in certain people, and having run its course it dies away again. The disease I allude to is characterised by the more or less sudden appearance upon the tip and edges of the tongue and on the lips and inner surface of the cheeks of a number of small superficial ulcers, often with a yellowish pellicle upon their surfaces. I have seen it spread over a great part of the mucous membrane of the mouth and to be attended in some cases by considerable swelling of the tongue. But as a rule, the ulcers are more or less scattered and are chiefly characterised by their soreness. No doubt this is what some call herpes of the mouth. The feature of the disease seems to me to be that it is a part of the life-history of the individual, for it returns again and again in the course of years and it is a very painful and inconvenient malady. If any idea of a cause is formulated it is usually "stomach." But I can confidently affirm that in many of these cases it is hard indeed to make out any derangement of the stomach, and the most careful dieting fails to prevent a recurrence. I think that on the whole treatment by quinine is the most successful, but as I have said, I am by no means sure that it does not run a course of its own uninfluenced by any drugs. Then there is the so-called ringworm of the tongue: what does it mean? Does it mean that if you could peer inside and see the mucous membrane at work in the life that you would see the same curious serpiginous eruption rippling over the surface of the stomach and intestine as it may almost be said to do over the surface of the tongue? Erythema of the tongue it might well be called, for, like the erythemata on the skin, it is full of irritating mystery, the which if one could unravel who knows but that one might find the key to many a physiological riddle. And, by-the-bye, before I pass away from the teeth and the mouth, may I say that if only dentistry and physiological chemistry would combine, how much good work

there is yet to be done upon the *saliva* of these several conditions that are supposed to be due to acidity, and what not. More than once as I have sat in that ominously comfortable dental chair, and have heard and seen the saliva syphon at work, I have endeavoured to stimulate my friend to a recognition of what good material was being wasted. One cannot but think that the systematic examination of the saliva from various groups of cases might give us a good deal of information, positive or negative, upon several obscure conditions of the juices. I do not think the subject has ever been worked at yet from this point of view, but I will make a present of the suggestion to those whom it may seem to appeal to.

The Lancet.

TREATMENT OF TIC DOLOUREUX.

By WM. EWART, M.D.

The following features, frequently noticed in sufferers, may be regarded as pointing to those constitutional influences which, though not necessarily leading to gout, underlie the gouty state :

1. The healthy and often ruddy complexion such as we associate with sthenic gout.
2. The presence of Heberden's nodules or of tophi in the ears.
3. A previous history of gravel or of stone.
4. A long history, often beginning in childhood, of gastric, intestinal, and hepatic disturbances of a nervous type.
5. The abiding strength of the pulse, which strikes us as no less remarkable than the resistance of the patient to the effects of long-continued pain and insomnia.
6. The adverse influence of alcohol and of certain forms of diet.
7. The presence of uric acid sand in the urine, was noted in several of the cases related.
8. It is also significant that in two of the male cases and in three of the female cases habitual bilious attacks were experienced in childhood and for many years afterwards.

The frequency of a gouty association has probably been

underestimated, because it is often not an immediate one. It seems to be the exception for sufferers from this neuralgia to be attacked by articular gout, and it might be said of them, among others, that it is their misfortune that they never experienced gout in their joints. The same immunity is sometimes witnessed in the cutaneous manifestations of goutiness, which may alternate in the hereditary cycle with neuralgia. Instances are familiar in which the skin affection occurred in the children, and the neuralgic affection in the grandchildren of gouty parents. Dyspepsia, due to gastro-hepatic catarrh, may have to be dealt with as a preliminary, and, in a mild case of this kind, the neuralgia may rapidly subside under treatment directed to the stomach. The state of the teeth and of the gums also calls for every attention, though as regards the teeth, more than the needful has often been done before the patient comes under treatment. It is a well-known characteristic of the sufferers that they ruthlessly sacrifice their sound teeth as well as those decayed in the vain expectation of relief. But the mucous membrane may be less at fault than the chemistry of digestion and of its products; and more searching remedies, which may be broadly termed alterative, will be needed. The alterative treatment may, in genuine gouty cases, be specially directed to the gout, with careful avoidance, however, of any depressing agents. In the generality of cases a modified treatment, favouring absorption as well as glandular activity (particularly that of the liver), will meet the gouty as well as the general indication. The salicylates, the benzoates, sulphur, chloride of ammonia, and taraxacum are available, but none of them probably equal in efficacy the salts of iodine and of mercury, and particularly their combination in the proportion of 20 to 30 minims of the solution of the perchloride of mercury, and of 6 to 10 grains or more of the iodide of potassium. The iodide may be tried alone, and should then be given in sufficient doses. Its action seems to be promoted by the addition of tincture of iodine in doses of 15 to 30 minims. The full measure of relief, however, was not obtained in the two cases where the drugs were administered in instalments until mercury was added to the iodides. Where the iodides alone had failed, this combination brought about a cessation of the pain.

British Medical Journal.

THE JUBILEE OF ANÆSTHESIA.

COMMEMORATION AT BOSTON.

The Jubilee of Anæsthesia was celebrated in the place of its birth by public exercises, held in the Massachusetts General Hospital, Boston, on October 16th. The "public exercises" were mainly of an oratorical character, and the ritual dinner, which in the United States, as in this country, is generally the most solemn part of such ceremonies, appears to have been omitted. It would perhaps be considering too curiously the meaning of this strange departure from the normal order of things if one should see in it a subtle recognition of the incompatibility between anæsthesia and a solid meal; but in any case, the fact that the way consecrated by Anglo-Saxon tradition of honouring persons or things whom we delight to honour was departed from on this occasion is worth recording.

Invitations had been sent to prominent members of the profession in the United States and in Europe, and the guests (among whom were Mrs. W. T. G. Morton, the widow of the discoverer of ether, his son, Dr. W. J. Morton, of New York, and some other members of his family) were received in the old operating theatre of the hospital, which was arranged in a manner as nearly as possible identical with what it was on the day when ether was first administered there. The hospital book containing the original record of the case was open at the page on which the memorable operation on Gilbert Abbott is chronicled.

LORD PLAYFAIR'S REMINISCENCES.

Lord Playfair, who, with Lady Playfair, was present as a guest, was invited to speak just before the close of the proceedings. He expressed his pleasure at being there, because he had taken a deep interest in every step in the discovery of anæsthesia. He remembered well how they welcomed the news from America. There was no jealousy in regard to this discovery. It undoubtedly belonged to the United States. One of his most intimate friends was Sir James Simpson, whose name must on every occasion of the kind be mentioned with gratitude. Lord Playfair then went on to relate how Simpson one day came to him saying he was disgusted with chloroform, and would thank him for the discovery of a

satisfactory substitute. In a few days the speaker was able to announce to him that he had found the required substance in bi-bromide of ethylene. Simpson wished forthwith to try this on himself, but Lord Playfair insisted on trying it first on rabbits. The next day Simpson appeared at Lord Playfair's laboratory, propped himself up with two chairs, and asked Lord Playfair for the solution. Lady Simpson, who was present, advised her husband to see how the rabbits had fared under the treatment before he applied it to himself. "When the attendant came in," continued Lord Playfair, "we saw him holding by the ears two rabbits—perfectly dead!"

British Medical Journal.

A CASE OF FATAL ARREST OF RESPIRATION.

By A. MACLENNAN, M.B.

The report of the following fatal case of chloroform anæsthesia, which has not, to my knowledge, been published hitherto, seems to suggest that more prominence should be given to the treatment of accidents of this kind, by tracheotomy, than has been done formerly.

J. H., male in middle life, was admitted to the Western Infirmary, Glasgow, with a fractured upper arm. Being then a house physician in the Western Infirmary, it happened to be my lot to administer chloroform. Violent struggling of an extreme type took place during the initial stage, accompanied by such voluntary apnoea as to be alarming. The chloroform mask was removed till breathing became freer, though it still continued laboured. As the patient was "coming out" the inhalation was proceeded with. The pupils became somewhat contracted, and breathing regular though still embarrassed.

Suddenly stoppage of the respiration took place. The pupils remained as before and did not dilate at that stage, showing that tonic contraction was still present.

Artificial respiration did not answer, and air neither entered nor left the chest till death had undoubtedly taken place. Had tracheotomy been performed when it was manifest that artificial respiration was useless instead of persisting

with it, in all probability a totally different result would have been secured. This case was that of a middle-aged, very robust man, apparently in perfect health. His heart was not sound, and at the post-mortem examination old pericarditis with adhesions and hypertrophy of the heart, with mitral disease, were found. The heart condition might account for the comparative suddenness of the death.

The efforts to breathe, which were noted in this, as in the former cases, with an obstructed windpipe, would put extra strain on the circulatory system within the chest. The positive or negative Valsalva's experiment gives rise to most alarming symptoms and signs, as anyone who has tried the experiment knows. So in this case the extra strain thrown on a damaged heart would cause death to be more rapid than it would otherwise have been,

In the cases in which tracheotomy was performed no obvious harm accrued, and I believe the procedure should be used in desperate cases of this sort without hesitation.

British Medical Journal.

COCAINE.

The following is a summary of an interesting paper on the "Rational Use of Cocaine in Surgery." (Dr. C. A. Dundore, *Medical and Surgical Reporter*.)

1. The use of cocaine in surgery should not be abandoned because its irrational employment has produced deleterious results.

2. Always make a thorough physical examination of the patient before injecting the drug.

3. It should not be used in cases showing organic disease of the brain, heart, lungs, or kidneys, or in persons of a neurotic diathesis.

4. Children bear it fully as well as adults.

5. The patient should always be placed in a recumbent position prior to the employment.

6. Constriction should be used, whenever possible, to limit the action of the drug to the desired area.

7. Use a freshly prepared solution for each case.

8. Distilled water is to be employed, to which phenic, salicylic, or boric acid is to be added.

9. A 2 per cent. solution has a better effect and is safer than stronger solutions.

10. Never inject a larger quantity than $1\frac{1}{2}$ grains when no constriction is used.

11. About the head, face and neck, one-third grain may never be exceeded.

12. When constriction is possible, the dose should be as large as 2 grains.

13. Every slight physiological effect is not necessarily to be taken as cause for alarm.

14. Cocaine *does* have effect on inflamed tissues.

15. In case alarming symptoms threaten, use amyl nitrite, strichnine, digitalis, ether, or ammonia.

Dental Review.

SYPHILITIC INFECTION FROM A BABY.

At the Sheffield Medico-Chirurgical Society, Dr. Arthur Hall showed a series of cases of syphilis, which had been traced to infection from a congenitally syphilitic baby, born in June, 1895. The mother of this child (Mrs. K.) presented an old syphilitic ulcer of the leg. The baby (J. K.) had ulcers round the mouth and buttocks. From this baby, the brother (A. K.) had been infected, the primary sore being on the left cheek. He has condylomata now. From this baby also, a little girl, æt. 3 (B. E.), living in the next street, was infected, the primary sore being on the lip. This was probably due to her sucking the baby's "dummy titty." This child has now secondary symptoms, and has infected her mother (C. E., æt. 39), the primary sore being on the left nipple. Mrs. E., previously quite healthy, had been in the habit of allowing her little daughter to suck at her nipple to send her to sleep.

THE DISCOVERY OF ANÆSTHESIA.

Mr. George Foy contributes a paper to *The Medical Press* and to conclude, gives the following dates on which surgical anæsthesia was produced by the three claimants to the honour of discovering surgical anæsthetics :—

Long's anæsthesia, with ether, on March 20th, 1842.

Well's anæsthesia, with nitrous-oxide gas, on December 11th, 1844.

Morton's anæsthesia, with ether, on September 30th, 1846.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, November 2, 1896. Mr. Robert Woodhouse, M.R.C.S., L.S.A., L.D.S. Eng., President. in the Chair.

The Secretary read the Minutes of the last Annual General Meeting, held on June 1, 1896, which were confirmed.

The following gentleman was proposed as a resident member of the Society: Lucien Edward Browne, L.D.S.I., Marsh House, Tottenham, Middlesex.

The following gentleman was ballotted for and elected a resident member of the Society: Robert Stephen Fairbank, M.R.C.S. Eng., L.S.A., 18, George Street, Hanover Square, W.

PRESENTATION TO LIBRARY.

The Librarian reported that in addition to the usual periodicals and journals, the following books had been received:—*Calendar of the Royal College of Surgeons*, 1896; *Transactions of the American Dental Association*, 1896; two copies, Nos. 11 and 12, "North American Fauna, United States Department of Agriculture." 1896; two copies "La Photomicrographie," by J. Choquet.

The President then delivered his Inaugural Address, which is published on page 1057.

CASUAL COMMUNICATIONS.

Mr. WILLIAM HERN read the following notes on a case of ankylosis of the temporo-mandibular joint in a boy.

A. S., a rather diminutive lad, aged 12, was first seen about four or five years ago. He was brought to the hospital by his mother, who complained of his inability to masticate his food.

Condition.—The lower jaw was small, undeveloped, and practically fixed to the upper, the patient being unable to separate the two jaws wider than about one-eighth of an inch of space in the canine region.

The upper jaw was fairly developed, and had marked protrusion of the incisor teeth. On attempting to forcibly separate the jaws, very slight additional space could be gained

and the mandible gave one the sensation of being checked by something solid, like bone rather than fibrous or soft tissue.

Teeth Present, Upper Jaw.—Permanent incisors and first molars, temporary canine and first and second temporary molars.

Lower Jaw.—Permanent incisors and first molars, temporary canine and first and second temporary molars.

Bite.—The mandible closed far behind the maxilla, but when the mouth was opened to its fullest extent, a space of about three-eighths of an inch was left between the tops of lower incisor teeth and the gum behind the upper incisors, the space being utilized by the patient to push his food through with his fingers when feeding himself.

The lower permanent molars occluded posteriorly to the upper.

History.—The mother stated that when 9 months old the boy fell off a chair, and shortly afterwards was obliged to go into a London hospital for necrosed bone in the leg, but there was no history of any injury to his face or jaw. In profile, the child showed an extremely receding chin, together with slight protrusion of the upper jaw. The full face view showed flattening on the left side of the mandible. Patient had measles at age of 4, and had never had scarlet fever. Mother first noticed that child had difficulty in opening his mouth when he was between two and three years old.

Being desirous of seeing whether greater range of movement between the jaws could be obtained by force applied gradually, I instructed the patient to wear by day, almost continuously, a strong wooden letter clip acting in the reverse way by narrowing down to the handle part to a thin wedge and placing this between the teeth. The boy wore this fairly regularly for about six months, and during that time the space between the occluding teeth increased to about double of that which he could previously open—about a quarter of an inch in the canine region.

Feeling that little could be expected from mechanical treatment, I then asked my colleague, the late Mr. Hulke, to see the patient, and decide whether any surgical treatment could be suggested. Mr. Hulke regarded surgical treatment of the case as of doubtful success and utility, and as the boy was then commencing to change his temporary molars, I decided to leave the case *in statu quo* until the completion of dentition.

In May last I saw my patient, and, finding he had erupted his bicuspid teeth, I asked my colleague, Mr. Sutton, to see

the boy. He advised the removal of both condyles of the mandible. The boy came into the Middlesex Hospital in August last, and Mr. Sutton commenced the treatment by removing the right condyle with the result that, after the operation, the boy could open the mouth to the extent of over an inch ; he has since been able to masticate well with all kinds of food.

Mr. BLAND SUTTON said cases of undeveloped mandible had interested him for a good many years, and bearing in mind the tradition of surgery, he had never felt disposed to perform any operation for them ; but when he wrote the article on diseases of the jaw for Mr. Treves' "Surgery," he made up his mind that if ever another case came before him, he would at once operate and deliberately take out both condyles. Mr. Hern asked him to see the boy, and he came to the conclusion that the left half of the jaw was undeveloped, although the right half was fully developed ; the jaw was so firmly ankylosed that by no manner of means could the patient get his mouth open, and he used to stuff his food in with his fingers, much like a schoolboy would fill a pop-gun. The parents were quite willing to have the operation carried out, and he started with the intention of removing both condyles. He made an incision down to the jaw where the condyle should be, and to his astonishment came on a solid pier of bone, as thick as his thumb. Neither the condyle nor the point where the joint should be could be distinguished, but there was a thin narrow chink out of which fibrous tissue projected. He detached the solid piece of bone, and then cut a piece out half an inch broad completely across it. The facts of the case might be fairly well stated by saying that the ascending ramus of the jaw on the right side was practically represented by a solid piece of bone, half an inch square, firmly anchylosed to the temporal bone. Having cut that piece of bone right through, taking care not to damage the nerve or artery, the patient's jaw was forced open with a powerful pair of forceps, and to his (Mr. Sutton's) astonishment the whole jaw began to move, and he discovered that there was a perfectly good condyle on the opposite side. For a few days there was a little trouble with the wound, a good deal of oozing coming from the under surface of the bone, but after four or five days the patient was perfectly happy. The etiology of the condition was one which had exercised him a good deal, and he thought the most reasonable cause for a lateral anchylosis of that sort might be possibly

explained by an injury to the temporo-mandibular articulation with the point of forceps during delivery. An injury at the time of birth might go on very slowly, and ultimately induce in young children an ankylosis such as had been described.

Mr. HERN said one very curious thing in connection with the case was the marvellous development of the platysma muscle. With regard to the use of forceps, he had questioned the mother about that, and though she knew the instruments were sent for at the time, she could not say whether they were used.

Mr. ALFRED WOODHOUSE referred to a similar case in a lady a little over 50. When she was 4 years of age she had measles, and inflammation occurred in the articulation, and whether from pain or some other cause, she ceased to open her mouth. She was sent to a gentleman of great reputation in those days, but the treatment received from him did not do any good, and the result was that the jaw became firmly ankylosed. Up to the time the patient came to him (Mr. Woodhouse), she had lived by pushing food through a space produced on the right side by taking out the canines and laterals in both the upper and lower jaws. Her lower jaw had not developed much, and was altogether receding, the muscles of the neck were also but feebly developed.

Mr. ALBERT asked Mr. Sutton if it were not possible that the ankylosis of the jaw might be the result of the mechanical obstruction offered by an enlarged condyle. It might be possible to explain the case on the theory that it was simply a congenital hypertrophied condyle.

Mr. SUTTON said there was no condyle, its situation being occupied by a solid pier of bone.

Mr. ROBBINS brought forward a case of retarded eruption of the permanent teeth. He remarked: Some six years ago I brought under the notice of the Society, a somewhat peculiar case of retarded eruption of some of the permanent teeth in the upper jaw of a young lady, aged about 20, the model of which was presented to the museum. It was one of those cases where no explanation could be given, although one was suggested by the mother, namely, that a fall in early childhood had displaced upwards the germs of the permanent teeth. On looking at the first model, one notices that from the right upper central to the second bicuspid on the left side the jaw is undeveloped, for the reason of course, that owing to the non-appearance of the permanent central,

lateral, canine and first bicuspid, the alveolus has remained *in statu quo*; one also observes that the right permanent canine is missing. When the case was first brought to me for examination, there was a history of constant irritation, sometimes amounting to pain just in front of the second bicuspid, which for want of support was leaning forward. At times a small discharge occurred at this spot; and on probing I could distinctly feel the polished cusp of one tooth, but could not be sure as to a second. In addition to the discharge, there was a constant desire to be biting something anything from a pencil to a hairpin. Above all this there was disfigurement. Finding that there was no possibility of the teeth erupting in a position to be of use, I advised the removal of the offender or offenders under an anæsthetic. In operating I found the leaning tooth was the missing first bicuspid, and immediately below was the misplaced canine. A small vulcanite plate was made, and has been worn ever since. Within the last few months I have again been consulted, and strange to say two more teeth have appeared, exactly in the same spot that the first two were removed from. These proved to be the missing central and lateral. Before the cusps came into view there was a repetition of the same symptoms: an overpowering desire to be biting hard substances, with the addition of constant and prolonged fits of sneezing. The second model, which I have here, shows the last two teeth *in situ*, and also the same after removal. I now find that the missing right canine is ready to make its appearance; and I am hoping that it may be trained into position. May I add that the somewhat troublesome sneezing and biting habits have quite subsided. Although there is seemingly little to learn from this case, I felt that it was sufficiently unique to bring before the notice of the Society.

There is one other little matter arising also out of a case I have previously reported, namely, one in which a patient of mine removed, almost painlessly, from the inside of his cheek a good sized piece of glass that had been tolerated there, without inconvenience, for over thirty years. In presenting the piece of glass to the Museum, I explained briefly that in early childhood the boy, not being acquainted with the nature of French windows, and being anxious to go to his mother, who was calling him from the garden, got his head mixed up with the window, and the old medical friend, who was sent for, bathed his face, and afterwards strapped it up in the old-

fashioned way. As the lad grew up he often told people that he had two pieces of glass in his cheek, and no one believed him until the first piece came through in the way I have described.

I promised that when the second piece came out I would also present that to the Museum ; and possibly, in the future I may keep my word ; but to-night I have here a photograph of the glass *in situ*, taken by the x rays.

We were unsuccessful with the two first attempts, but the third came out fairly well.

The first attempt was made with a piece of sensitised film, somewhat too large, that had been covered with black paper and rubber dam ; only a portion of the large piece of glass shows, but a small portion of another fragment is demonstrated of which we were ignorant. In the next attempt, we placed a portion of film on the tongue side of the mandible, and increased the exposure, with the result that the teeth, alveolus, and a portion of vulcanite plate, show fairly well ; but the glass is a failure.

We next cut a smaller piece of film, placed it as before, inside the cheek, and during exposure pulled the cheek upward with the excellent result shown in the middle picture.

Mr. BALDWIN asked if the prolonged action of the Röntgen rays had any prejudicial effect on the skin or hair.

Mr. ROBBINS said that no injury was done to the skin or to the hair follicles. The longest exposure given was four minutes, the most successful one occupying three minutes.

Mr. T. CHARTERS WHITE read a communication "On a Method of Infiltrating Dental and Osseous Tissues." He said :—

It does not necessarily follow that because a man may be filled with an intense and an absorbing interest in all matters appertaining to microscopic technology, that he can produce the important scientific work with which the pages of our *Transactions* have lately been graced, and therefore I hope nothing will be expected of me so elaborate as the papers we have had before us during the last few months ; but if I can in any way assist by the introduction of fresh methods of manipulation, it will be a source of gratification to myself to be able to further the researches and observations of others. It was during our late Dental Association meeting that I was repeatedly asked particulars relative to my method of infiltrating the dental and osseous tissues that I then exhibited, and as the questions evinced much interest and it was impossible

to clearly answer them at that time, I was induced to offer a casual communication to the Odontological Society in which the utility of the process could be pointed out and the manipulation explained.

First, with regard to the utility. Those workers with the microscope who have been accustomed to mount sections of teeth or bone in Canada balsam, must have been often disappointed in finding that in the finished specimen all cavernous and tubular structures have been obliterated, the balsam being absorbed by the dentinal tubuli or the lacunæ of bone. For many years I surmounted this objectionable feature by mounting such tissues after a thorough saturation in water and drying their surfaces; it naturally followed that the internal structures being filled with water, the balsam could not run in; and this method sufficed for many years. In thinking over this effect, the suggestion occurred to me that if I could fill these spaces with some coloured medium, it would be a more decided evidence of the existence of cavities, did such exist, than could be furnished by the water method. I cast about for these media, and first thought of using gelatine, coloured by some of the red aniline colours, and although this was partially successful, an objection to its use arose from its solubility should after grinding be found necessary. This added to an imperfect fluidity by which it failed to enter into such minute cavities as the dentinal tubuli, compelled me to give that material up. I afterwards tried various materials with not much better success, but ultimately came back to the process I am about to describe.

In the first place, the section must be ground moderately thin to about $\frac{1}{32}$ of an inch, and dehydrated by immersion for five minutes in absolute alcohol, then for the same time in ether. When thoroughly saturated with this it must be transferred to a very thin solution of celloidin—about three grains of celloidin to half an ounce of equal parts of absolute alcohol and ether. In making this mixture coloured red, fuchsine must be added to the alcohol first, as the dye will not readily mix with the completed solution. When first employing this method of infiltration I used the solution too thick, and experienced considerable difficulty in getting the coloured celloidin solution to run into all the delicate cavernous structures, such as the dentinal tubuli are; no great difficulty is met with if the air contained in these is replaced by ether first—the solution then follows the ether readily. When the tissue has remained in this solution for a day or

two, if deemed sufficiently impregnated with it, it may be removed and placed on paper to evaporate. I use paper for this purpose, because some of the earlier preparations I left to evaporate on glass, to which they stuck, with the result that they were broken in the removal; if they should stick to paper they can be readily soaked off in water. Another advantage of this method of infiltration is that the sections are rendered less brittle by their saturation with celloidin, and can be ground to the desired tenuity without much fear of fracture, whilst cavities, normal or abnormal, show up a brilliant red without their obliteration by balsam running in; sometimes the balsam becomes stained by the red, but this does not militate against the efficiency of this process.

The specimens under the microscopes are not so pretty as they might be, but will indicate sufficiently the advantage of adopting this method if we wish a clear demonstration of all the abnormalities of dental pathology. For any failings in them I must offer the apologies of a very busy man, and leave them to your favourable criticism.

Mr. F. J. BENNETT said the Society was much indebted to Mr. Charters White for his valuable contribution. It was really very remarkable to be able to stain such minute structures as the dentinal tubuli. The ingenious suggestion Mr. White had made as to colouring with celloidin was one which was new, and one which appeared to be full of promise. He should like to ask Mr. White whose celloidin he used, because it was a very difficult substance to obtain of good quality, and pure. With regard to the dentinal tubuli, no doubt the drying of the celloidin was so very slight in the tubuli, that practically no difference would be found on drying; but when they came to larger cavities, especially cavities occupied by blood vessels—for instance, in the cementum, and the larger lacunæ, they should be on their guard to remember that celloidin did shrink. and therefore if they saw an apparently new structure under the microscope, it should be remembered that possibly it was due to the celloidin having contracted in drying. With regard to the peach stone, it was well known that stones of fruit at all stages of development were extremely good structures for illustrating by analogy the formation of lacunæ of bone. The fruit stone started as a typical cell; gradually the woody tissue impregnated the cell, and in such a way as to reduce the organic structure and for the woody tissue to take its place. It did so in the peculiar manner the lacunæ did—the body shrinking irregularly, and

leaving apparent processes like the canaliculi found in bone. There was no better study for beginners than to take the fruit in the spring of the year and make sections of the stones as they developed, until they ultimately became indistinguishable to amateurs from bone lacunæ.

Mr. CHARTERS WHITE said the celloidin he used was Scherin's. It was sold in flakes and readily soluble. With regard to the lacunæ, the lacunæ were closed cells, and no coloured celloidin would run into closed cells except those on the surface. The lacunæ embedded deeply in the tissue were not filled at all, and he believed to a great extent that was the case with the peach stone.

The PRESIDENT said it now only remained for him to thank those gentlemen who had kindly brought forward casual communications.

The meeting then adjourned.

STUDENTS' SOCIETY. NATIONAL DENTAL HOSPITAL.

An ordinary meeting of this Society was held on Tuesday, November 6th, 1896, at eight o'clock, the President, T. G. Read, Esq., in the chair.

The minutes of the previous meeting were read and confirmed, and the usual welcome was given to visitors.

The following gentlemen were balloted for, and were unanimously elected—Messrs. Chaundy, Huggins, Must, Dowling, Laurence, and H. Rose.

The following gentlemen were proposed as members of the Society, to be balloted for at the next meeting—Messrs. Edwards and Bennett.

Upon Casual Communications being called for, Mr. W. R. Read showed an upper bicuspid with three roots.

Mr. Must showed several microscopic slides, one being a section of tooth prepared by the Weil process showing pulp of the pulp and absorption of the dentine in the pulp cavity by osteoclasts.

Mr. C. Browne Thomas showed a partial upper gold denture made by burnishing thin soft gold on a sulphur model, and

then strengthening it, thus doing away with the necessity of making metal dies, so saving time when in a hurry.

Mr. S. Rose showed a microscopic slide of a section of a fibroid epulis undergoing calcareous degeneration which had been excised by Mr. Rushton.

The President showed a case of deficiency of teeth in both the upper and lower jaw of a patient aged 24. Four teeth were quite polished on the labial surface, although they did not occlude with any other teeth.

Mr. Glassington presented a copy of his book on "Dental Materia Medica and Therapeutics."

The President then called upon Mr. J. Clifford Wing for his paper on "Dental Hygiene," which was published in our last issue.

DISCUSSION.

The President complimented Mr. Wing on having read an excellent paper, and he stated that whilst he considered that it was essential for the development of strong healthy teeth that the bran ground fine should remain in the flour from which bread was made, he considered it was of equal importance that the germ of the wheat should also be left in the flour owing to its digestive properties. He explained that a grain of wheat was enclosed in coats of bran, and that at the thick end of the enclosed part the material was softer than at the other part, which was the kernel proper, and consisted almost entirely of starch; the softer part being the germ, this was separated from the kernel by a layer of cells which under certain conditions produced diastase, which in turn was formed into dextrine, and then into dextrose or grape-sugar. Thus these cells act the part of little digestive organs, by converting the starch of the kernel into grape-sugar to nourish the young wheat plant. The makers of a much advertised bread having caused these cells to become active, have used a certain amount of this germinated wheat in making their flour, and the bread thus obtained quite a name owing to its digestive properties. Some time ago a sub-committee of dentists examined the mouths of the children of several schools; they were surprised to find that the neglected teeth of the children in the poorer class schools, were much less predisposed to caries than those of the higher class schools, in which the bread supplied is mostly made from flour from which the bran, the germ and outer parts of the kernel have been removed. The germ is removed from flour

owing to its changing colour during baking; it gives the bread a dirty shade. About eighteen months ago he was chatting with a miller at a roller mill; the offal remaining in the last silk covered cylinder was shown; this consisted chiefly of flattened out germs, and the walls of the outer starch cells of the kernels, the bran having mostly been removed in the earlier stages. It was asked if this offal was mixed with the pigs' food. The miller replied he did the same as many others and mixed it with the flour used for making low priced bread, and that supplied by contract to the Union and certain Charity Schools. The President expressed himself strongly of the opinion that the above statement explains why the above-mentioned sub-committee found that the teeth were best in certain poor class schools. He recommended for a simple dentifrice, one pound of prepared chalk, one ounce of powdered castile soap, a little carmine and a flavouring essence. He advised members in recommending patients to use lime water to point out to them that if used directly after drinking tea, brown stains were produced on the teeth.

Mr. H. Rose thanked Mr. Wing for his interesting paper, but thought he had omitted what advice to give to patients wearing artificial teeth, as they came to the dental surgeon with very dirty dentures. He always told his patients when he first put in their dentures, to take the denture out at night and put it in a tumbler of water in which was a piece of washing soda the size of a Barcelona nut.

Mr. C. W. Glassington said that he always told his patients to brush their sets and any remaining teeth they had in their mouth with carbonate of soda. Mr. Wing had not mentioned that the teeth of patients confined to bed should be kept clean as surgeons were often very careful to see that everything else was clean and not attend to the teeth at all. He said that as a mouthwash when there was bridge work, Listerine was the best. He always dipped his instrument in peroxide of hydrogen before putting in the mouth to see if they were aseptic, if not, he dipped them in perchloride of mercury, 1-2000.

Messrs. S. Rose, W. R. Read, Gudgeon, Laurence, and Dowling also joined in the discussion.

The President then proposed a vote of thanks to Mr. J. C. Wing and those who had brought forward Casual Communications, and the meeting terminated.

Dental News.

GENERAL MEDICAL COUNCIL.

Sir Richard Quain, Bart., President, in the chair.

On Thursday, November 26th, the Council had again before it the consideration of the case of Clement Henry Sanders, (registered as in practice before July 22nd, 1878), which had been adjourned from June 6th, until the present Session. The charge was that being a duly registered dental practitioner he acted as cover of an unqualified person named Müller, thereby enabling him to carry on a Dental Practice, and to practise Dentistry and Dental Surgery in all respects as if he were a duly qualified Dental practitioner. The following was the decision arrived at by the Council on June 6th. "That the charge made against Mr. Clement Henry Sanders has been proved to the satisfaction of the Council, and that the further consideration of the case be adjourned until the next Session in November."

Mr. R. W. TURNER appeared for the British Dental Association, the complainants, and Mr. Johnston Watson, for Mr. Sanders.

Mr. FARRER, the Council's solicitor, said that the case was one in which Mr. Sanders was found to have put an unqualified dentist in possession of a practice at Exeter, he himself attending at Aldershot, but as it was the first case in which that covering had been brought forward, the Council gave him time to appoint a duly qualified man to conduct his practice at Exeter and at Okehampton. Mr. Sanders had now attended to say whether he had complied with the suggestion of the Council, and to hear what the Council had to say to him now on the whole of the case.

Mr. SANDERS then went into the witness box, and in answer to Mr. Farrer, said his practice at Okehampton and Exeter was now being conducted by a duly qualified and registered practitioner named Volpe. For the bulk of the week Mr. Volpe was at Exeter and on Saturdays at Okehampton. He had been appointed on June 29th, but previously to that another registered practitioner had been appointed, viz., on the 27th or 29th April. Since April his practice had been in charge of a registered practitioner.

Mr. FARRER said that the complainants had not given any notice that they had anything further to say, and the matter was now in the hands of the Council.

In answer to Dr. Macalister, witness stated he was not now employing any unqualified assistants for operating, but only as mechanics. Mr. Müller was in his employ as a mechanic.

The PRESIDENT: Will you undertake to the Council not again to engage the services under like circumstances of an unqualified assistant?

The WITNESS said that was his intention. He would give an undertaking not to employ an unqualified man as an operator. He had given that undertaking at the meeting of the Council in February, and had tried to do his best to act up to it.

The PRESIDENT asked if Mr. Turner had any statement to make.

Mr. TURNER said they left the matter where it was, so far as the evidence was concerned, at the enquiry before the Dental Committee. They said then that it was the first case and of course it was not for the British Dental Association to press the matter. At the same time they wished it to be clearly understood that there was to be no humbug about the words "operator" and "mechanic," that was the trouble they had had with all those people. So far as men in the workshop were concerned of course anybody might be employed, but when it came to actually seeing patients, then they said it was "covering." If Mr. Sanders clearly understood that, and there was no "riding off" upon what operating and mechanical work meant he was satisfied for the Association, but they wanted that clearly understood. It might be remembered that at the enquiry Mr. Sanders seemed to have some very vague notions as to whether stopping with gold required a qualified man, and stopping with alloy an unqualified man. He wished those points to be clearly understood.

Dr. MACALISTER asked if witness employed any unqualified assistant for operating purposes at all.

The witness: No, and I never propose to do so. In answer to Dr. Heron Watson, he stated that he always employed a registered medical practitioner in cases where anæsthetics were required, and thought the employment of any other man would be improper. He had never attempted such a thing.

Dr. THORNE THORNE said the only other point upon which they wished to be clear, was whether Mr. Sanders was going to allow an unqualified man to see his patients at all.

The WITNESS said he did not intend to allow an unqualified assistant to see his patients in any way professionally.

Strangers having, by direction of the Council, withdrawn, the Council deliberated on the case *in camera*. At the conclusion of the deliberations of the Council on this case, a motion made from the chair; it was resolved "That the Council having further considered the charge made against Clement Henry Sanders, does not adjudge him guilty of infamous conduct in a professional respect."

Strangers having been re-admitted,

The PRESIDENT informed Mr. Sanders that the Council had very carefully gone into his case and had come to the conclusion, that having further considered the charge made against him, it did not adjudge him guilty of infamous conduct in a professional respect; at the same time they advised him to be extremely cautious in the future, and to pledge himself that he would not employ an unqualified assistant in any capacity.

Mr. SANDERS: "I will give you my word, sir, and I will keep it."

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DENTAL EXAMINATIONS.

The following gentlemen having passed the necessary examination, have been granted the Licence in Dental Surgery of the College:—A. G. Hudson, (Leominster); S. R. Lane, (London); I. Leventon. (Dublin); R. Sievers, (London); W. G. T. Story, (Dublin).

The following gentleman passed the Primary Dental Examination:—F. H. G. Pakenham, (Dublin).

DISINFECTION OF INSTRUMENTS.—Boro-glycerine, combined with sulphate of zinc, affords an agent capable of disinfecting all instruments, with no danger of staining the teeth, poisoning the patient, or injuring the instruments.

A. W. Harlan.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The first ordinary meeting of this Society for the present Session, was held in the Board Room of the Dental Hospital on Monday evening, November 2nd. Mr. Robert Lindsay, L.D.S., the President, occupied the chair, while the Honorary President, Mr. W. Ivison Macadam, F.R.S.E., delivered an inaugural address, entitled "Alloys." Seventeen new members were proposed and seconded, and altogether the session promises to maintain the high level of excellence attained in the past. A Smoking Concert will be held in the Windsor Hotel, Princes Street, on Friday, December 11th, and the golf and swimming sections of the Athletic club have already held interesting and exciting competitions.

THE LITERARY SIDE OF THE PROFESSION.

"Dr. Wm. H. Steele, in the *Dental Register* deals with the advantages that would accrue to the dentist if he early formed the habit of systematic professional reading and writing. The young dentist starts out frequently with good resolutions in this respect, but as his practice grows and other interests crowd in, the reading is dropped, and he becomes a "back number." Dr. Steele uses as his text Bacon's famous words, "Reading makes the full man; speaking makes the ready man, and writing makes the exact man." When the "back number" is asked to read a paper at a society meeting, he says, "I can't write; I have enough ideas, but I can't put them on paper." Neither can a good crop be produced from an uncultivated field. Reading is the great cultivator of the human mind which prepares it for literary production, and it is impossible for one to be a good writer without being a reader. The truth of the third part of Lord Bacon's saying, "Writing makes the exact man," becomes apparent at once to the man who prepares a paper for any purpose. He arranges his thoughts, consults his authorities, and mindful that he will have to bear criticism, lops off the unnecessary word and retreats from the untenable position. Our dental journals offer good training ground for the young writer, and every young practitioner should avail himself of the advantages offered (for unless we begin

writing when young, unfortunately we will not take to it when old) and contribute one or two articles a year upon some favourite subject which he is willing to take the time to investigate. As before said, he will be well compensated for his time and labour. When a man makes up his mind to write, his professional life assumes a new phase, the dogged treadmill of everyday sameness is gone, he has something to think of while pursuing his daily routine, he takes a new interest in looking for new features, his powers of observation and classifications are receiving cultivation and his mind will grow and expand like a well-watered plant in the summer sunshine. The dentist located in a small country place thinks often that because he is not in the city, his opportunities are not so great for observing and keeping pace with the latest as his city brother; but Dr. Steele points out that as "necessity is the mother of invention," and the country dentist thrown more on his own resources, with no dental depot at his command, is often developed in originality in a way that is not possible in the city. Slip a note-book into your pocket, sharpen your pencil, and begin your notes on some subject that suits you. Add a stick of timber here and there, as you find it, to the frame until the skeleton is complete; then clothe it from time to time as you have the leisure, and next year, when some member of the executive writes you for a paper, don't say "I can't write." It is too lame an excuse. Every one has some good thoughts that stagnate for want of expression, for as the poet says, "Thoughts shut up want air, and spoil like bales unopened to the sun."

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by correspondents.]

To the Editor of the "British Journal of Dental Science."

Sir,—I am very pleased to see that you have opened your columns to a correspondence on the subject of the Dental Hospitals, including the Dental departments of sundry General Hospitals, becoming vast suppliers of Artificial Teeth, and think it high time something was done to check them. I can thoroughly endorse every word of your correspondent's letter, "Registered Dentist," and am in the same boat with him, except that I have been in practice somewhat longer, always, I am proud to say, without advertising, but now, like him, I am afraid I shall have to do so in order to earn a living for my family, through, as

your correspondent points out, the competition of the Dental Hospitals on the one side and the advertising dentist on the other.

In my time at the Dental Hospital, (it was in the old days at Soho Square) the very subject of Artificial Teeth being mentioned between the patients and the students was tabooed, and direful consequences threatened for a breach of this law. I will not go so far as to advocate a return to this condition, but I do think that the happy medium might be struck between this and the present unseemly scramble for every "order" they can obtain. Of course, no one would object to a certain number of cases for Artificial Teeth being undertaken at the Hospitals to illustrate to the students the different methods of procedure.

In this connection are the students aware of what is likely to be the ultimate effect on their future career if the authorities persist in and endeavour to augment their present system? I do not so much allude to the fortunate young man who will simply follow his father or other well established practitioner, but the ordinary respectable man who having taken his L.D.S. expects to start in practice and earn a living, which he is certainly entitled to do, considering his outlay.

There appears to be a certain topsy-turvydom in the present arrangement, that the very men who are endeavouring to raise the status of the Profession are being crushed and abolished by the Institutions that should most endeavour to uphold them. The authorities seem to be quite powerless to cope with the advertiser, and even the unregistered practitioner. The Dental Hospitals are making enemies of those who should and would be their best friends.

I enclose my card, and beg to remain, Sir,

Yours obediently,

L.D.S.Eng.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of Subscription as under:

Twelve Months (post free) - - - 14s. od.

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M. J. CHOQUET ON THE SCIENCE AND ART OF PHOTOMICROGRAPHY.

By A. HOPEWELL SMITH, M.R.C.S. Eng., L.R.C.P. Lond.,
L.D.S. Eng.

Lecturer on Dental Surgery and Dental Histology,
National Dental College.

At a recent Dental Congress held in Bordeaux, a paper entitled "Utilité de la Photographie dans les Recherches d'Histologie et de Bactériologie," was read by M. J. Choquet of Paris. This proved to be the nucleus of an important work on "La Photographie" just issued by Charles Mendel of Paris. It is the paper enlarged and illustrated: it abounded in excellent suggestions and practical advice: and as a result of its perusal, the following notes have been compiled in the belief that the hints thrown out in the monograph are worthy of a wider publicity than that afforded by a mere stray pamphlet.

Author of "Traité Technique des Préparations microscopiques à l'usage du Dentiste," and several other treatises, Dental Surgeon to the Faculty of Medicine, and Demonstrator at the Dental School of Paris, M. Choquet is a representative of the leading thought in France in Dental Microscopy, and is well known for his intimate knowledge of the science. It is not surprising then, that he can speak with some authority on questions relative to this particular subject.

On every side it is agreed that a good photomicrograph is the most perfect means at our command of reproducing the details of microscopic specimens. Drawings are useful for teaching purposes, diagrams serve to illustrate points, but they cannot, however well executed or by whatever methods obtained, give an absolutely exact rendering of the appearance of a tissue; the personal equation is almost certain to creep in. Any suggestions that will assist in the performance of methods for the production of correct photomicrographs must be welcomed by every histologist in this country.

A microscope and camera with the usual photomicrographic impedimenta are required, but an objective without a microscope stand can be made to give a magnification of 50, 100, or even 200 diameters. Any model of instrument may be employed and arranged in either a vertical, oblique, or horizontal position. The latter is chiefly that which English and American workers adopt, the former being more popular on the continent. The oblique inclination of the microscope, on account of its non-fixity, and consequent tremor is practically useless, and should be, as M. Choquet observes, "*proscrite de tout laboratoire.*" His great objection to using horizontally-placed apparatus appears to be that when homogeneous immersion objectives are made use of, the drop of oil gradually runs to the lowest portion of the cover glass. We have not found this to be actually the case, though theoretically it may be correct. A kind of capillary attraction, we believe, between the proximal surfaces of the field-lens of the objective, and the surface of the cover-glass holds the minute globule of oil in place.

The use of upright apparatus will only be indicated for the purpose of photographing fluid objects such as the rouleaux of blood-corpuscles in liquor sanguinis, or urinary deposits, etc., when there would be a tendency for the cells, or crystals

to fall by their own specific gravity towards one edge of the cover-glass.

To the great advantages derived from the use of a horizontally-fixed microscope it may be added that there is no fatigue in arranging the position for focussing a section, as the operator can remain seated throughout his manipulations, a desideratum not obtained when employing vertically inclined instruments.

Too great a stress cannot be laid on the importance of the illumination of the object. The light of a paraffin lamp is most commonly employed because of its economy, universality and brilliancy of its results. We have found, with M. Choquet, that a round wick is quite as useful, if not more so, than the flat wick with edge turned towards the stage, so very frequently recommended in text-books. The value of the lighting depends more on its centralisation, and its ability, with the help of a condenser, to uniformly illuminate the field, than to its actual nature. Professor Hunter proved this at Edinburgh, at the Annual Meeting of the British Dental Association in August 1895, where he exhibited the simplest means of illumination known, viz., the light of a halfpenny candle! In his demonstration he made use of no special form of expensive apochromatic objective corrected for photography, no substage condenser, no stage diaphragm, but a bi-convex lens, a water globe made of flint glass, with a plano-convex lens of crown glass cemented in one side, and a candle. And his negatives showed fields that were perfectly flat, and images that were perfectly sharp. His original paper can be found in the Proceedings of the Scottish Microscopical Society for 1895, and an abstract appeared in the Journal of the British Dental Association, Vol. xvii. No. I. Either will well repay the reader's attention.

Scarcely less important than the illumination is the special staining of the tissues, and the employment of specially pre

pared photographic plates. Blues are always difficult to photograph, but give the greatest delicacy (especially Loeffler's) in bacteriological preparations. One method of getting over the difficulty will be, in this case, the interposition of a yellow tinted glass screen between the illuminant and the object. Mixing with the blues of the preparation, it gives on the ground glass a green image. Lumière's isochromatic plates, series A, are sensitive to yellow and green, and these are the plates recommended here. They seem to possess advantages over the Ilford and Edwards isochromatic plates, excellent though they be. They are issued by Fuerst & Co., of Philpot Lane, E.C., and consist of series A, B, and C, the former being sensitive to yellows and greens, the second to yellows and reds, and the latter to all three colours. Their usefulness is obvious when it is remembered that the common histological stains comprise many of the colours of the spectrum.

In bacteriological work the best stain for photographic reproduction is undoubtedly Bismarck Brown, also known as Vesuvine. It may be used with much success with ordinary plates, and gives great delicacy of detail in the negative. Next in order of preference come Fuchsin, Gram's method of staining, and its modifications, and finally the violet and blue stains. These all necessitate the use of isochromatic plates, and the latter, in addition, a yellow coloured screen.

But the impregnation process of Van Ermengen, when better known and more frequently used is destined perhaps to supersede all other plans of colouration. It renders prominent such delicate structures as the flagella of typhoid and other bacilli, and the capsule of Friedlander's pneumococcus.

The process briefly is as follows :—

A small quantity of the culture containing the micro-organisms having been diluted with a drop or two of distilled water, is placed on a clean slide. Evaporation of the water

is allowed to take place, and then the culture is fixed by means of a mixture of

| | | |
|------------------|---|--------------|
| Ether sulphuric | } | Equal parts. |
| Alcohol absolute | | |

The slide being again dry, several drops of a fixing-bath are placed on the surface of the culture, and left for half-an-hour in the cold, or five minutes in a temperature of about 60°C. The bath is made of

| | | |
|----------------------------------|-----|-----------|
| Osmic Acid (2 per cent solution) | ... | 1 gramme. |
|----------------------------------|-----|-----------|

| | | |
|---|---|---|
| Tannic Acid (10 to 25 per cent. solution) | 2 | „ |
|---|---|---|

When fixation has occurred, the slide is carefully washed in distilled water, and then placed, for several seconds, in a 0.5 to 0.25 per cent. solution of silver nitrate. It is then removed, and, without washing, passed into a reducing bath composed of

| | | |
|-------------|-----|------------|
| Gallic Acid | ... | 5 grammes. |
|-------------|-----|------------|

| | | | |
|-------------|-----|---|---|
| Tannic Acid | ... | 3 | „ |
|-------------|-----|---|---|

| | | |
|------------------------|----|---|
| Melted Acetate of Soda | 10 | „ |
|------------------------|----|---|

| | | | |
|-----------------|-----|-----|---|
| Distilled Water | ... | 350 | „ |
|-----------------|-----|-----|---|

The preparation remains here for a few minutes and is then again transferred to the silver nitrate solution. It is next removed and carefully washed in distilled water. The slide is finally dried, a small quantity of Canada balsam added, and a cover glass applied.

Bismarck Brown is *facile princeps* amongst all stains for bacteriological specimens: not so, however, in histology, in the opinion of the author.

For best photographic results, the impregnation series of reagents is strongly recommended. Impregnation stains are obtained by the formation, in the midst of the elements of a tissue, of an exceedingly fine metallic precipitate. Thus chloride of gold, nitrate of silver, and more rarely chloride of palladium, osmic acid, chromate of lead, perchloride of iron, and sulphate of copper are used with this object in view.

M. Pfitzner has introduced a combination of the impregnation stains with the ordinary basic or acid colouring reagents. Gold and safranine, silver and eosine, yield admirable results; and Mr. Howard Mummary following the suggestion of Pollaillon, has used most successfully iron and tannin for rendering prominent the nerve elements of the pulp.

Sections stained with picro-carminé can be well photographed by using Lumière's Isochromatic plates, series B.; while other double stains, such as Bismarck brown and Methyl violet, suggest the use of series A. Ordinary plates reproduce well sections of nervous tissue when stained with aniline blue black.

M. Choquet closes his very interesting paper by giving a good hint as to the photography of larger objects than those conveniently suitable for the stage of the microscope, in consequence of their large size. As an instance, a section of the mandible with the teeth *in situ* can be easily photographed by his plan. He writes :—

“If you wish to obtain excellent results, use an ordinary projection lantern, on which you have mounted a photographer's lens. Between the illuminant and the lens, place the specimen, and thus project the image on a wall. Focusing is easily done, and by advancing or retracting the lantern the size of the resulting negative can be increased or diminished at will. Having obtained the correct dimensions and focussed carefully, the light must be extinguished, and on the wall at the proper place, must be fixed a sensitive plate, the room, of course, being meanwhile in perfect darkness.” The rest of the *modus operandi* is so obvious that it is unnecessary further to describe it.

The monograph, thus hurriedly reviewed, is useful ; but M. Choquet's larger work “La Photomicrographie,” ought to be welcomed in England by all who are interested in the science and art of histology and bacteriology.

DENTAL MECHANICS.

By HARRY ROSE, L.D.S. Eng.

Lecturer on Dental Mechanics, National Dental Hospital.

PLATE WORK.

*All Rights reserved.**(Continued from page 1016)*

CROWNS WITH PORCELAIN FACES.

After the sides of the root of the tooth have been reduced to a parallel condition by means of suitable wheels and trimmers, an impression of it has to be taken ; this is effected in a somewhat similar manner to that described for pivot teeth, that is by means of a small German silver tray, just large enough to extend across the space and overlap the half of the two adjoining teeth if present. When a division has been cut between the root and neighbouring tooth, a narrow matrix or strips of German silver should be placed in between them, before taking the impression. (Fig. 54.) These pieces

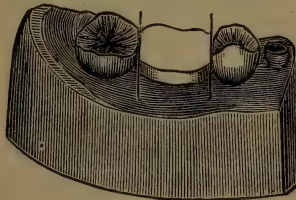


Fig. 54.

come away in the composition, and are removed after the impression is cast.

The Author usually makes his models of Sullivan's Cement (precipitated copper and mercury). It is packed into the impression pretty soft, using a blunt pointed instrument for the purpose, and then the model is placed on one side for twelve hours to harden. This makes an excellent model, but

the length of time it takes to harden is a disadvantage occasionally. The other two materials used are fusible metal and plaster of Paris. Crown Composition seems to be the most reliable to use with fusible metal, but the degree of fusibility of this latter should be ascertained or the impression may be damaged. A plaster of Paris model requires such careful handling, that the average workman is not equal to it. If it is used, it should be carefully dried and boiled out in resin and wax, or stearine. We have stated that the sides or walls of the root should be parallel; this may perhaps be better understood by the student by referring to Figs. 55 and 56.



Fig. 55.



Fig. 56.

The first represents the root in its natural condition, the second after the sides have been made parallel. In the former it will be at once seen that a collar or band, that will pass over it, will not fit it lower down, or higher up as the case may be, while with the latter a band can be so adjusted that it will slip on and off like the joint of a fishing-rod.

Where possible it is best to leave the lingual portion of the root as high as possible; this gives great support to the collar, and prevents the forward thrust of the opposing teeth from displacing it.

Where the exposed part of the root admits of a fairly deep collar, a pin in the root is unnecessary, but where the collar has to be made shallow, a pin in the canal will add greatly to its stability.

After obtaining the impression of the root and the bite, we will now presume that all the other details have to be finished in the laboratory. In order that the band may fit under

gum, the root should be deepened by trimming away with a very sharp flat sculptor or graver a little from around its neck. We next proceed to measure it. This operation may be conveniently done by taking a piece of thin copper, or soft iron binding wire, and carefully adapting it, not only to the circumference of the root but also to the contour of the gum around the neck. This having been done the two ends of the wire are twisted together until it tightens on the root.

The wire is now carefully removed from the root and placed upon a piece of glass or paper in the same position as on the root. A little plaster of Paris should now be mixed up and poured on to the wire ring, covering it to the depth of nearly half an inch. When this has set, all the plaster within the circumference of the wire ring is removed and likewise any excess that may have oozed under the wire, for the under surface of the wire ring represents the contour of the gum. Having therefore converted the plaster into a tube, one end of which is bounded by the wire ring, (Fig. 57), a little fusible metal is melted and poured into it, the end where the wire is, being sealed up by pressing a couple

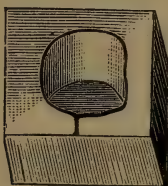


Fig. 57.

of thicknesses of blotting-paper against it. The mould should not be quite filled with metal, as any surplus has to be cut away.

This operation taking as it does only a few minutes, puts us at once in possession of a hub or mandril that we can use to form and adapt the band to, and thus requires afterwards only a little fine adjustment to the delicate model of the root.

After the pouring of the fusible metal hub, the wire ring can be removed from the plaster, and when divided opposite the twisted ends, and straightened out, will give us the length of gold or other metal required for the collar. If it is intended that the two edges overlap, we must allow a slight excess over the length indicated by the wire.

To bevel the edges and overlap them makes a somewhat stronger joint than soldering edge to edge, and when one is making a platinum crown to fuse porcelain on, this should always be done.

Having adapted the band, which should be of No. 5 guage and 22 carat fineness, to the hub, it should be held together by twisting a piece of iron binding wire around it when on the root, then removed and soldered at its lower or gum border, it may now be tried again on the model of the root.

The quality of solder used should not be less than 18 carat fineness, or if a platinum band is made it should be soldered with fine gold. After trying on the root, the collar is flared out a little at its upper border so as to conform somewhat more to the size of the crown of a tooth, and the front part is cut away (see Fig. 58). We now have to decide whether

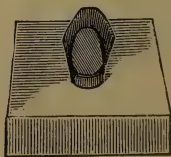


Fig. 58.

we intend making a solid gold back to the tooth, or whether it is intended to be hollow. In the former case we must cut out a piece of gold or platinum to fit inside the collar and on to the surface of the root, thus capping it. The pattern for this piece is easily obtained by removing the band from the

root, and pressing a piece of pattern lead or soft paper on to the part of the band that encircles it. A corresponding piece of gold or platinum is now cut out, the band is replaced on the root and the piece that is to form the cap is placed in position and cemented to the band with hard wax ; it is at this stage that a pin to pass into the canal may be soldered to the cap if found necessary. Having cemented the cap to the collar, it is removed from the root, and the inside of the cap is filled very carefully with brickdust or pumice and plaster, so as to prevent all chance of the solder running through and destroying the fit of the cap. After soldering, (Ash's No.2 may be used for this purpose,) it is placed in acid to clean. It is now placed on the model and a tooth fitted to it (Fig. 59). The tooth is backed with a piece of No. 8 plate, and the pins either rivetted or made half round and bent over on to the back.

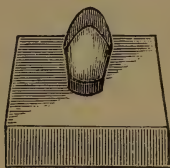


Fig. 59,

When cementing the tooth into its place care must be taken that the edges of the collar fit flush with the sides of the tooth. It is now invested in brickdust and plaster as before only in this case a little of the investment should be brought up over the cutting edge of the tooth to protect it, and if possible the joints of the band with the back of the tooth should be left exposed, so that one is enabled to see whether the solder has made a perfect joint. Before attempting to solder, one or two little shots of gold should be fused under the blowpipe, and fitted ; these are to place in the space

between the back of the tooth and the band, and are to help in forming the inner cusp of the tooth.

After the wax has been cleared away from the tooth, some borax is run around the inside of the collar and one of the gold shots is placed in position together with a number of small pieces of solder, it is now heated up over a Bunsen burner until red hot, and then the solder is run with the flame of a blowpipe. Another gold shot is now placed on the former, together with more solder until the cusp is built up to its required size. It is now cooled down slowly and after pickling touched up with a file and wheel and polished. This is known as a porcelain faced crown with a solid cusp.

In order to make a porcelain faced crown, with a hollow cusp, it is necessary after the collar is made, to cut away the front part so as to be able to fit the tooth, the root is not capped all over, but may be partially, either by soldering a semilunar piece of platinum foil to extend backwards from the narrow part of the collar in front, to the back of the tooth (Figs. 60 and 61), and if it is left somewhat full and unsoldered at its posterior margin, it may be lapped slightly



Fig. 60.

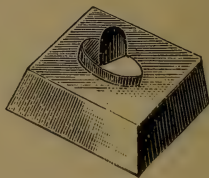


Fig. 61.

over the metal back of the tooth to which it ultimately gets soldered. This has the effect of strengthening the narrow band of metal that extends round the front of the tooth. This partial cap may be soldered to the collar before fitting the tooth, in the same manner as described for the full cap.

After fitting the tooth and lapping the free end of the

platinum cap over the back, the tooth is cemented to the collar, which should have been flared out somewhat, and then the hollow space is filled in with wax and built up so as to form the posterior cusp and articulate with the bite. We now reduce the wax so as to allow for the thickness of a piece of No. 7 plate between it and the bite, and then we can either make a depression in a piece of lead with a suitable punch, and stamp up a piece of gold, or make a die and counter in fusible metal, or zinc and lead, building up our small model with wax or composition to permit of its ready withdrawal from the sand. When the piece of gold to form the cusp has been formed, it should be thickened by melting a little scrap gold or solder into it, and have the edges bevelled so that it fits into the collar and against the back of the tooth. We now warm the collar and remove the wax from the inside, and with the slightest amount of cement (hard wax) round the edges, fix the tooth and crown piece to the collar. A little thick borax should be pressed into the joints between the collar and back of the tooth on the inside, and also around the circumference of the crown piece ; this is allowed to dry. We may now invest the crown so as to be able to solder it either from the inside or the outside.

It simplifies this part of the work if the soldering is done in two operations, that is to say, the tooth may be soldered to the collar first, then after cooling gradually, the portion of gold to form the cusp is placed in position, and the crown reinvested and the soldering completed.

ALL GOLD CROWNS.

The method of making an all-gold crown is to fit the collar to the root as previously described, then to flare out the sides with contouring pliers, after which wax is built up in the interior of the collar, so as to articulate with the bite, the

wax is then reduced in height so as to allow for the thickness of the gold to form the crown.

A small zinc die and lead counter, or a fusible metal die and counter are now made, and a piece of No. 5 or 6 fine or coin gold is stamped up to form the crown.

This crown piece is now filled in with scrap gold and solder until it presents a flat surface. It is now adjusted to the bite and attached to the collar with a piece of binding wire or a clamp (see Section 2 Dental Laboratory), and it is then soldered, the pieces of solder after running some borax round the joint, being placed on the inside of the crown.

Perhaps a safer method, for one who is not quite up to the mark in soldering, is to bevel the edges of the crown piece so that it fits within the flared edges of the collar, and after adjusting to the bite, and fixing it in position with a little hard wax, some thick borax is painted around the joint on the inside of the collar; this is allowed to dry, and then the whole is invested in brickdust and plaster up to the edge of the crown piece, taking care at the same time, that the investment is carefully packed into the inside of the crown. Before commencing to use the blowpipe the metal should be made red hot over a Bunsen burner.

The soldering may now be safely accomplished from the outside, as the collar is protected from any chance of sweating by the investment.

For a further description of all-gold crowns see page 111 of the Dental Laboratory.

The Author has endeavoured in this section of his work to direct the student and young practitioner to the most simple methods of working, at the same time to produce perfectly satisfactory and artistic results; above all, it has been his aim not to perplex him with devices that are never practicable, nor sound in principle, and to avoid as much as possible using those standard specimens of dentistry, good, bad, and

indifferent, that seem to have been transmitted, with one or two notable exceptions, into every book on Dental prosthesis within the memory of man.

It was his original intention to have included in this section a description of Bridge-work, but the possibilities of what may now be accomplished in this class of work, by the combination of porcelain and continuous gum, and also to avoid a repetition of the various processes, has decided him to include this branch of the Dental art in a future work.

ABUSE OF HOSPITALS.—We are glad to air any grievance in our correspondence columns, and we have published lately two letters from gentlemen complaining of the unfair competition of Dental Hospitals and the Dental department of General Hospitals supplying artificial teeth. As regards the metropolitan Dental Hospitals, one of them does not supply, so far, artificial teeth at all, and when it does, it will only do so to the very poor, gratis; another only supplies them to its nurses and officials, not to the outside public; and the third, which supplies them to the outside public for a fee (of which we disapprove) does so only in small numbers to carefully chosen candidates. As regards the General Hospitals, we have no data to go upon, but we have seen or heard nothing to warrant us in the belief that they are becoming vast suppliers of artificial teeth. We certainly think, however, that leakages take place, and that occasionally students run the risk of breaking regulations by attending to the mechanical wants of patients, who, though they might not be able to afford to pay for a quantity of gold stoppings, yet could very well afford to pay a reputable practitioner his fee for a serviceable plate.

British Journal of Dental Science.

LONDON, DEC. 15, 1896.

PRELIMINARY EDUCATION.

Examinations are things of modern growth. When the world was younger, things were managed differently. The lawyer, the cleric, the physician, the artist and the craftsman went through their apprenticeship and followed in their masters' footsteps. Later on, Trade Guilds were formed and the apprentice before being admitted into these powerful bodies, had to present evidence of full and satisfactory apprenticeship to his master. Schools of Law and Theology were early formed, though at first they were teaching rather than examining bodies. Schools of Medicine followed later, the apprenticeship to a master being in vogue until quite recently, and even to-day the system has its staunch advocates. The system of examinations, though it has many drawbacks, is on the whole the most satisfactory test of efficiency of which we know. There is no doubt that examinations are not perfect, that examiners are but human, and that very often their object would seem to be to ascertain not what the candidate knows, but what he does not know. Be that as it may, the system works well on the whole, and there is no doubt of its future continuance and development.

In no department of knowledge have greater strides been made of late years than in medicine. Not so long ago, thirty-six months or less were deemed sufficient as a period for acquiring medical education as compared with the present time when a five years' curriculum has to be fulfilled. Many can remember the time when an examination in anatomy and surgery lasting an hour was thought sufficient to give a candidate the right to place his name on the Medical Regis-

ter as a qualified practitioner, as compared with the present moment when examinations extend over several days and comprise a great number of subjects. We have lately seen how the examination for the L.D.S.Eng. is going to be altered and extended, and now we are confronted by the statement that the Medical Preliminary Examination is about to be made more difficult. In the Summer Session of the General Medical Council it was approved "that the Education Committee be requested to consider whether the time has not come for erasing from the list of recognized preliminary examinations the examination for a second-class certificate of the first or second division of the College of Preceptors." The Committee has since come to the conclusion that they cannot recommend the adoption of this resolution, firstly,—and we think principally—because the present regulations have only been in force since 1892, and the rule of the Council is to allow a longer time than that to elapse before altering its regulations; secondly, because the standard had been recently raised, the number of referred Candidates having been increased from 36 to 44 per cent.; and lastly, because it would be unfair to impose conditions upon one examining body in England, without including other bodies whose examination was accepted, and those in Scotland and Ireland. Dr. Tuke considers that the large percentage of rejections in professional examinations is caused by the low standard of preliminary education accepted by the Council. "The profession is open to half-educated men, immature men, who are not fit to grapple with the various sciences with which they have to do," he says. As regards the question of increased expense, he says the expense of a medical education is less than that of any other liberal profession. The outcome of the recent discussion in the Council is "That the Council should represent to all bodies whose Junior Examinations in General Education are recognised, that it desires that the stringency of the pass requirements in these Examinations should gradually be increased." So much for the present; as regards the future, the following resolution which was also passed will give a

very good idea of what to expect at the beginning of the twentieth century. "That the Council instruct the Committee to consider the requirements of the several junior preliminary examinations now recognised by the Council, and to report on the steps that may be necessary for enforcing a higher and more uniform standard therein; that the recommendations which the Committee may propose with this object be brought before the Council at the November sessions of 1897, in order that, if approved, they may be brought into force on January 1st, 1900." We hope that in increasing the stringency of the examinations such items as legible writing and good spelling will hold a high place. A fair general education ought to be insisted on for every boy entering the profession, and his possession of this should be tested by a preliminary examination conducted by a central authority in different centres, so as to be as uniform as possible. The training ought to be at school, not at the crammer's, and ought to consist of a proper proportion of "ancient" as well as "modern" side. In scientific studies, such as Anatomy and Physiology, Latin and Greek are of immense help; while later on the power of being able to consult Continental authors with ease is a great advantage. This increased stringency may seem hard to those of our readers who have sons to place in the world, but there is no getting out of it. Times are changing, and we must change with them—cheerfully if possible—or be left behind.

LECTURES VERSUS CLINICS.—The question has often been asked whether attending a course of lectures is not waste of a student's time, and we are quite certain that in many cases it is. There are some lecturers who have the gift of imparting knowledge in an attractive way, but as a rule the lecturer to whom the students have to listen patiently for an hour on end, is a man who has written on the subject a great deal better than he speaks, and if he has not, somebody else has. The real work is done in clinics, demonstrations, and

“grinds,” and we consider it would be a great improvement if lectures, as such, could be reduced to a minimum, and their places supplied by practical teaching, to small numbers if possible, so that every student could easily see and be seen.

THE WOMAN AND THE LADY.—The *Hospital* quotes an advertisement which lately appeared in the *British Medical Journal* for a “Medical Woman as Clinical Assistant for the Out-patient Department : and Lady as Assistant Dispenser.” It is to be hoped that the medical woman and the dispensing lady will be kept in separate cages, or, if not, that the latter will not presume too much on her superior dignity.

LORD KINNAIRD has accepted the position of Trustee to the Dental Hospital of London, Leicester Square. This, together with the fact that Mr. F. A. Bevan is another Trustee speaks well for the Charity’s worthiness. It may, therefore be concluded that the appeal now being issued for funds for a new hospital is well worthy of the public support Mr. F. A. Bevan solicited for it at the recent annual meeting.

THAT entertaining gentleman, “A Peripatetic Journalist,” who has taken to enlivening [the columns of Saturday’s *Daily News* with his shirt cuff jottings, has at length discovered the reason why a certain class of London girls ignore the charms of domestic service. “Oh ! madam, it’s not so easy as you think ; they all go to the *tooth* factory,” said a registry office keeper to an anxious lady. What was the tooth factory ? pondered the journalist ; and an answer has been supplied him in one of the remarkable volumes for which Mr. Charles Booth is responsible.

This says :—“No dentist makes his own false teeth, though some profess to do so. Their manufacture is confined to four houses in London, employing between them about

five hundred persons, of whom nearly three hundred are women. The trade is a small and jealous one, though the output in teeth is enormous. Bone teeth and ivory teeth have had their day, and bags of human teeth from the battle-fields would no longer, as in the early part of the century, find a ready market in London. Their place has been taken by artificial or mineral teeth, into whose composition felspar largely enters. The men and the boys mix and mould and fire the teeth in crucibles ; the women trim off the burrs, put on the polish, and make up the finished article into sets."

PULP MUMMIFYING.—Dr. Firthe, in the *Cosmos*, says there is no necessity to extract pulps from canals after devitalization. After allowing the arsenic to remain for three days, he cleans out the pulp chamber, washes out with a solution of sodium oxide, and afterwards with oil of cassia and rectified spirit. He then dries with hot air, fills the pulp chamber with a paste composed of Thymol and mercuric chloride, of each two parts, carbolic acid, tannic acid, and muriate of morphia, of each one and a half parts, with sufficient oil of peppermint and cassia to form a stiff paste, using bone instruments. He leaves the canals to take care of themselves, as he avers that the tannate of mercury which he says is formed can be depended upon to prevent any further trouble *with absolute certainty*. This ought to bring joy to many hearts, but is not Dr. Firthe perhaps overestimating the power of his paste? He gives no dates or statistics.

FORTUNE MAKERS.—The *Statist* has published a table of the fortunes left behind them by the richest men in various trades and professions. Foreign bankers and merchant bankers head the list, thirty-eight in number, who left on an average the comfortable total of half a million apiece. At the opposite end of the scale come "physicians and surgeons," who, sixty-seven in number, leave a paltry average

of £50,000, or only a tenth part of the merchant princes. The averages of the successful lawyers, judges, barristers, and solicitors, amounts to £84,933, while the wealthy defunct members of the Stock Exchange averaged £95,665. Coal owners average nearly half a million, brewers £167,000, and newspaper proprietors over £100,000. The fact is that if immense fortunes are to be made—and we consider money grubbing one of the great vices of the age—it can only be done by employing to the best advantage the work of others, either their brain or muscle.

CHARACTER-TELLING BY THE TEETH.—The *New Zealand Farmer* has a set of most extraordinarily hideous woodcuts delineating the various kinds of teeth, with their supposed characteristics. The man of “artistic” temperament when he gazes on the set of teeth which his artistic fate has imposed upon him, must be filled with deadly loathing, and must wish that he had been born “insipid” or even “characterless,” as he then would have been able to mix in Society. Personally, we should prefer the “jovial” or “heedless” dentition ; any lack of noble qualities in our character being preferable to being cursed with the teeth belonging of necessity to the “courageous” or the “thoughtful.” The teeth of the “wicked” are quite sufficient to damn him in his own as in other persons’ eyes in this world and the next, and drive him to deeper gulfs of despair and crime.

Review.

The Dental Surgeon's Daily Diary and Appointment Book.
London : John Bale and Sons.

Apparently the Publishers consider that this Diary has now been perfected as far as possible, for we fail to find any difference in matter or arrangement from that issued last year. It is certainly a very serviceable book.

Dental News.

GENERAL MEDICAL COUNCIL.

Tuesday, December 1st, 1896.

Sir RICHARD QUAIN, President, in the Chair.

DENTAL EDUCATION AND EDUCATION COMMITTEE.

Mr. BRYANT: I beg to move that the Reports on the Inspection of the Qualifying Examinations of the following Dental Licensing Bodies: (1) The Royal College of Surgeons of England, (2) The Royal College of Surgeons, Edinburgh, (3) The Faculty of Physicians and Surgeons of Glasgow, (4) The Royal College of Surgeons in Ireland, (5) On the qualifying examinations in Dentistry, and on a letter from the Royal College of Surgeons of Edinburgh be received and entered on the Minutes.

Mr. WHEELHOUSE seconded the Motion, which was agreed to.

Mr. BRYANT: I rise to propose that the Report on the Inspection of the Faculty of Physicians and Surgeons of Glasgow be adopted. I will try to make my observations as brief as I can, but we must not forget that this is the first visitation that the Examining Bodies have had from this Council, and it is therefore the first report that has been handed to this Council on the Examination of the Dental Licensing Bodies. I propose to take these bodies in the order in which they were visited, and the first that was visited was the Faculty of Physicians and Surgeons of Glasgow. I might say in this as in others, in order to save time, that if you look down page 6 of the Final Report of the Dental Education and Examination Committee, you will see the different schemes drawn out for comparison. At the top of the page is the scheme stating the requirements of this Council, and in the four following columns you will see the different scheme examined by the four Dental Bodies. If you critically look at that you will find on the whole that the curriculum required by this Council has been fairly followed, and that where deviations have occurred they are on the lines suggested by this Council, and possibly a little in advance. So that this Report on the Faculty of Physicians and Surgeons of Glasgow is fairly in accord with the requirements of this Council [reads Report]. I move "That the Report of the Examination Committee on the Inspection of the Dental Qualifying Examination of the Faculty of Physicians and Surgeons of Glasgow be adopted."

Mr. WHEELHOUSE. I beg to second that.

Dr. CAMERON. The fact that Mr. Bryant has so very fairly read this long answer of the Council of the Faculty to the remarks of the Inspector, renders it unnecessary that I should have to enter into a very lengthy explanation. There are, however, one or two points to which I should like to refer. Perhaps one of the most serious criticisms of the Inspector, is where he says that the marks in one case were apparently adjusted to enable the candidate to pass. That criticism appears at page 16 of the Inspector's Report. In the first place, I may say that personally, I do not think that it is a wise thing that the Oral Examiners in assessing the numerical value of the Oral Examination, should have before them the numerical value that has been appended to the Written Examination. But we must remember that after all a certain number given as a judgment on an examination is only an approximate judg-

ment. The fact that the judgment is expressed in exact terms, unfortunately does not make the judgment itself exact, and there can be no better example of that than the case referred to in the last inspection of the Apothecaries' Hall of Dublin, in which it is stated by the Inspector the Visitor, that the two Examiners after listening to the performance of one of the candidates, assessed the value, the one at 20 and the other at 50 per cent. It therefore follows that two examiners equally competent and listening to the same answer may come numerically to very different conclusions, whereas if they had had the opportunity of discussing the matter, they might be found to be very much more nearly in agreement. For my own part, where a student does remarkably well in a *viva voce* examination and is only a very little below the mark in a Written Examination, I think it is a fairly arguable point whether a complementary number may not occasionally be given in order to allow him to pass, on the whole I do not give any personal opinion in regard to that, but at least it admits of argument. In this case, however, the Examiner says, "I am perfectly convinced that had the examiner not had the marks of his paper before him at the time, he would not have felt the smallest temptation to give him pass marks in his *viva-voce*, far less to give him a little more." But, unfortunately, in this very case, the Inspector had got seriously confused, apparently, as between two candidates. He had followed the candidates from table to table, and he had mixed up the various subjects. He says, "One Candidate, who was of opinion that quinsy was an inflammation of the parotid gland, it having with much difficulty been elicited that it was an inflammation in any gland at all, and whose answers throughout were very poor indeed, received pass-marks. Following the same Candidate to another table, I heard him questioned upon the treatment of neuralgia. He proposed to prescribe iron; asked in what form, he said Blaud's pill; but he had not the least idea what form of iron it contained, nor could he give the dose and constitution of any form of iron. Asked for another tonic, he proposed ten minim doses of Fowler's solution, which he considered to contain arsenious acid and morphia, but he did not know in what quantity. His other answers were of the same type, yet, it being apparent that he had received a little less than pass marks for his paper (more, in my opinion than the paper deserved), he was actually given more than pass-marks, so as to make up his deficiency on the paper." Now that gentleman was really two single gentlemen rolled into one in some way or other, because there is not one man on whose schedule there is evidence of his having been examined in all these subjects; so that, as is stated in the footnote in the answer of the Faculty, evidently the Inspector was led into an inadvertent error in this matter. As regards the other unfavourable criticisms of the Inspector, most of them are really conceded by the Faculty, and most of them have been corrected or are in process of correction, and the Council may rely on their being loyally followed out.

Sir PHILLIP SMYLY: Just one word in explanation. The last speaker has alluded to the examination of the Apothecaries' Hall in Dublin. That was the conjoint Examination of the Apothecaries' Hall and the College of Surgeons. He is also a little confused with regard to the difference in examiner's marks, and has been a little misleading. There were two examiners who gave very different marks. The subject was Operative Surgery. One examiner had his operations done very well, it is mentioned in the Report; the other gave tracheotomy, and the student performed badly, so that the difference in the marking was from the fact that the two operations had been performed in a different manner, and not from any difference of opinion on the whole examination.

Dr. MACVAIL: I should like to point out that what purports to be the Report of the Committee on page 33 does not make one word of comment; it is a mere abstract of what is said first of all by the Inspector, and secondly by the Body examined. How can we adopt that? It means nothing. It looks as if the Committee had been frightened to say anything as between the Inspector and the Body examined. I think they are quite right, but they should say so, because there is no doubt that it is one of the most peculiar inspections that have ever been placed on any Body; it is a most extraordinary document altogether, and I can quite understand that it has been too much for the Examination Committee. To talk about agreeing to this Report on pages 33 and 34 is absurd, because there is no report in it.

Mr. BRYANT: I would ask Dr. McVail to remember that this is only one of a series, and that the final Report of the Committee takes into consideration the whole of them together, so that there will be some comments in that Report. We did not think it expedient to make any comments or express any positive opinion about this Report as it stands now.

Dr. MACVAIL: Would not it be better to cancel pages 33 and 34?

Mr. BRYANT: I do not see that we can cancel them. I will add in order to fall in with Dr. McVail's views, "That the Committee are pleased to find the examination a sufficient one."

The motion was agreed to.

Mr. BRYANT: The next Report to which I wish to draw the attention of the Council is the one on the inspection of the Examination of the Royal College of Surgeons of Edinburgh, [reads Report]. I should like to say that the requirements of the Dental Board are quite up to the requirements of this Council, and there are no exceptions, indeed, I think they have been particularly loyal; they seem to have followed them in every detail in the right way. In order to fall in with Dr. McVail's criticism on the previous Report, I will add "The Committee of the Dental Education and Examination Committee are pleased to find that the Report is in every way satisfactory and sufficient." I move "That the Report of the Dental Education and Examination Committee on the Inspection of the Dental qualifying examination of the Royal College of Surgeons of Edinburgh be adopted."

Dr. HERON WATSON: I have much pleasure in seconding that. I believe the College that I have the honour to represent will be perfectly satisfied with the amount of care which has been bestowed on the question of the inspection of this Examination in Dental Surgery. So far as the College is concerned, it has every reason to be satisfied with the observations which have been made, and to regard the statements contained, whether in the account of what has occurred, or in the recommendation of the Inspector as singularly full, singularly destitute of any important objection, and containing a number of things which no doubt will be estimated at their proper value, in the consideration of these matters in the time to come.

The motion was agreed to.

SIR WILLIAM TURNER: I beg to propose that the further consideration of the Reports of the Dental Education and Examination Committee be adjourned to the May Session."

Mr. TEALE seconded the motion.

Mr. BRYANT: I feel that these Reports are important, and at this late period of the Session, the members of the Council are not giving that attention to them which they deserve, and therefore I think it is

expedient that we should fall in with the suggestion, although I support it with very much regret.

DR. HERON WATSON: I have a motion down on the paper with reference to a practical question which it appears to me is of some importance, bearing on the letter from the Royal College of Surgeons of England, which is among the Reports from the Dental Committee. It is of importance when we take into view the fact that the London College is preparing to make a new departure with regard to their curriculum in connection with their examinations. I presume that it is their intention from the documents which I have received, that those alterations are to come into force on January 1st 1897. If this matter is not taken up now, then I suppose the Royal College of Surgeons of England will carry out their expressed intention. If they will withhold putting it into operation until the matter has been laid before the Council, then I should not trouble the Council in the matter, because the information I wish to derive, is upon the very important question of the relation which the Bodies have towards the Council, in introducing any new arrangements with reference to new educational methods at the Examinations. If I have an assurance from the representatives of the Royal College of Surgeons of England that it is not their intention to carry through this new scheme of education and examination of dentists in the early part of the year 1897, until the question has been brought up as to what the position of the different Bodies is with regard to the undertakings given in connection with the recommendation of this Council, I shall be quite content.

MR. BRYANT: The observations which Dr. Heron Watson has made are very interesting, and they are calculated to draw me into a very long and important discussion, but that course I do not intend to adopt. The College I represent has drawn up those Regulations, they have passed the Council of the College, and they will come into operation on January 1, 1897. We show remarkable reference to [the] General Council, but we do not feel that we are bound to ask them or any other Body what we are to do, as to what we consider best for education, and my own feeling is that it is well that the Council should recognise that fact, for it has happened, and I daresay it will happen again, that by giving a little liberty to examining and conducting Bodies, those Bodies will often advance and show this Council the way in which other Bodies should go. Our College of Surgeons has done that before, and I am disposed to think in this question of dental arrangement, that we may be doing it now. I am sorry I cannot give comfort to the representative of the College of Surgeons of Edinburgh who has handed in a very curious letter from his College criticising and finding fault with my college for venturing to do anything without the sanction of this Council. As the Representative of the College of Surgeons of England, I repudiate altogether this Council interfering with our work, unless we show very strong indications that we are going against the principles which have been laid down by this Council. I can show very easily that the Regulations which my College have now made as regards the Dental Examinations are consistent with the principles which have been laid down by this Council, and I could as easily show that they are very far in advance of those adopted by other Bodies. Under those circumstances I do not know what Dr. Heron Watson may say.

DR. MACALISTER: As this question has been raised I may say that it appears to me that the Dental Education and Examination Committee would have done better, and your Chairman would have done better, if they had asked the Council's instructions with regard to revising the existing requirements of the Council, because I see in his Report he calls

them "the existing requirements of this Council"; if it turned out those were antiquated, and that advance was desirable in the direction indicated by the Royal College of Surgeons of England, I am perfectly sure that this Council would indorse any recommendation for its improvement. But as several Bodies in different parts of the Kingdom are supposed to be more or less bound by our requirements, I think it is desirable that they should advance side by side, and that one Body should not take the lead, although it may be for the improvement of Dental Education; if it does so, it shakes off the authority of the Council altogether, and other Bodies may do the same, and not advance, but recede. They might equally say "We do not care what you require," and a dangerous principle would be introduced. I would, therefore, suggest that if the report of the Committee on the letter from the College of Surgeons of Edinburgh is deferred with the other Reports, that the Examination Committee should take the matter up again, with a view to recasting, if necessary, and improvement if they think fit, the present requirements of this Council, so as to bring them into conformity with the latest advances of science and experience.

Dr. HERON WATSON: I am in a great difficulty, but as we have matters of such urgent importance before us, I do not desire to press this matter any further. I suppose this question will be transferred from the present Session of the Council to the May Meeting next year, and we shall then have an opportunity of taking the matter up. This is a constitutional question which I have brought forward in my motion and it has to do with the right of any Body who understands what the requirements of this Council are with reference to this educational scheme, and granting Diplomas for certain subjects, to differ from those requirements, and differ in a way not of addition, but of subtraction. For example: what the College of Surgeons of England propose to do in one matter is, instead of having two courses of anatomy, to have only one; instead of having medicine, medicine is entirely brushed away, with the exception of attendance at a course of lectures. There is to be attendance at the Hospital only in connection with clinical surgery and surgery, and not upon medicine at all; and *materia medica* is to be entirely dropped out. I do not enter into the question as to whether it is a wise or an unwise change, but it does seem to me that it is a somewhat awkward state of matters for this Council, when our requirements are known, and when there is a representative of the Royal College of Surgeons of England upon this Board, that this measure should be carried out without one word being said to the Council of any proposal on the part of the College to make the changes, and especially changes of a kind which are to diminish the amount of education at present required by this Council. I am not given to be suspicious, but one can hardly suppose that a man of Mr. Bryant's intelligence could think for one moment that we should be made otherwise than suspicious by the fact that while it was immediately after the Meeting which we held in May and June that this subject was taken up, we hear nothing about it until the very last day of this Meeting. None of the papers were put in circulation; in fact, I believe that had it not been for this letter from the Royal College of Surgeons, Edinburgh, in connection with this point, there would have been no note of warning given at this Meeting as to what was prospectively in view on the part of the Royal College of Surgeons of England, and what the difficulties of the other Bodies would be as regards their position towards this Council when they saw what was being done. I deplore the idea of the Royal College of Surgeons of England going in the direction of reduction of the subjects in their curricu-

lum without having presented a notice of it to the Council, and asking their opinion.

SIR WILLIAM TURNER: Would you mind reading Section 22 of the Dentists' Act? I think it is as well to emphasize the point.

Dr. HERON WATSON. My Motion does emphasize it. It is "That in view of the action of the Royal College of Surgeons of England, in the matter of altering the Scheme of Education and Examination of that College for their Dental Diploma without previous communication with this Council, together with the statement contained in a foot-note on page 5 of a Report of the Dental Education and Examination Committee to the General Medical Council, signed by Thomas Bryant, (Chairman), of date November, 1896, 'that the College of Surgeons of England has never admitted that its Regulations required the sanction of the General Medical Council,' this Council do now instruct the Registrar, that he shall in each year apply in writing to each of the Bodies granting Dental Diplomas or Certificates, requiring it to furnish to the Council before its May Meeting, in accordance with the provisions of Section 22 of the Dentists' Act 1878, such details of its existing Regulations under which it grants a diploma or certificate, to practise dentistry or dental surgery as shall enable this Council to determine how far these Regulations conform to the existing requirements of the Council." I had better perhaps read that Clause 22 in order to enable the Council to at once apprehend what it is that I alluded to, "Every medical authority shall, from time to time, when required by the General Council furnish such Council with such information, as such Council may require as to the course of study and of Examinations to be gone through in order to obtain such certificates as are in this Act mentioned, and generally as to the requisites for obtaining such certificates." That being in the Act seems to give me a stronger case in favour of my remarks, and I would therefore very urgently desire that either Mr. Bryant would agree that no further action shall be taken in the matter, until the Council has had an opportunity of considering this Motion, or if that cannot be so, I should then crave the permission of the Council to move the Motion which I have just read, and take its opinion upon it, I cannot of course at this late hour think of taking up the time of the Council by entering into all the details which I otherwise should have done, but this appears to me to be a very important constitutional question with reference to the question of the Council with regard to one of the Bodies which sends its representative to this Council, which is supposed to be the regulating Body of the Medical profession—more especially with reference to matters of educational examination.

SIR WILLIAM TURNER: I would venture to point out that my motion for delay does not cover Dr. Watson's Motion. My Motion for delay merely covers the report and leaves Dr. Watson free to move his Motion. The reports which I propose shall be adjourned are those upon the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, and on the qualifying examinations in dentistry.

The Motion for the adjournment of these Reports was agreed to.

Dr. HERON WATSON: Then I will now move (1) That the letter from the Secretary of the Royal College of Surgeons of Edinburgh addressed to the President of the General Medical Council be received and placed upon the Minutes. (2) That in view of the action of the Royal College of Surgeons of England in the matter of altering the Scheme of Education and Examination of that College for their Dental diploma without previous communication with this Council, together

with a footnote on page 5 of a Report of the Dental Education and Examination Committee to the General Medical Council, signed by Thomas Bryant, (Chairman) of date November, 1896. 'that the College of Surgeons of England has never admitted that its Regulations required the sanction of the General Medical Council,' this Council do now instruct the Registrar that he shall in each year apply in writing to each of the Bodies granting Dental Diplomas or certificates, requiring it to furnish to the Council before its May Meeting, in accordance with Section 22 of the Dentist's Act 1878, such details of its existing Regulations, under which it grants a diploma or certificate to practise dentistry or dental Surgery, as shall enable this Council to determine how far these Regulations conform to the existing requirements of the Council." I think I had better now read this letter from the College of Surgeons of Edinburgh which I avoided doing before. In doing so, I shall only state that there was no wish on the part of the College of Surgeons of Edinburgh to say anything disrespectful of the College of Surgeons of England in connection with this matter. The great object they had in view, was to obtain the opinion of the Council upon the constitutional question as to the rights of a Body sending a representative to this Council to make changes in its scheme of Education and Examination, more especially such changes as are suggested in connection with this new arrangement with regard to the Dental curriculum of the Royal College of Surgeons of England, which it is proposed shall be brought up on January 1st, 1897, without first having submitted it to this Council for [an opinion as to whether they regard it as in accordance with the requirements of the Dental curriculum of the Medical Council which was brought up in the first instance in March 1879, was again brought up in 1894, [and has again been brought up by the Report of the Committee in 1896, in which we may say that no material change is suggested anywhere. The first indication that I received on this matter was when I had seen a document which says at the top "January 1st, 1897, Examination Hall, Victoria Embankment, London, W.C., Royal College of Surgeons England, Regulations relating to the Diploma in Dental Surgery," and which we are now informed is really to be brought into operation on the first day of January 1897. From the further remarks we have heard, we are given to understand that although they may present to us this matter, they certainly are not inclined to do anything more than go through a formality, as they regard themselves as entirely exempt from being under any direction of the Council. I shall now read the letter which has been sent by the Secretary of the Royal College of Surgeons of Edinburgh, dated Nov. 17, 1896.

"Sir,—I am directed by the President of Royal College of Surgeons of Edinburgh and his Council, to apply to you for information regarding the Course of Study, and the examinations required by the General Medical Council for the Dental Diploma. In the Regulations thereto, passed by the General Medical Council on March 25th, 1879, the following courses, among others, were required.—(1) A second course, during a winter Session, of anatomy, or alternately, a course of not less than twenty Lectures on the Anatomy of the Head and Neck. (2) A course of chemistry, six months. (3) A course of practical chemistry. (4) A course of Materia Medica. (5) Twelve months attendance at a General Hospital with clinical Instruction.

"From the Report of the Education Committee on the codification of the existing Regulations of the General Medical Council, applicable to Dental Qualifications, in 1894, it would appear that these Regulations are regarded as being in force, and that Registration as a Dental

Student must precede the course of Professional Study laid down by the Council, in 'the same manner as the existing Regulations for Medical Students.' The Royal College of Surgeons of Edinburgh, has accordingly required Candidates for its Dental Diploma to conform to the Regulations of the General Medical Council. It appears, however, from the 'New Regulations relating to the Diploma in Dental Surgery,' issued by the Royal College of Surgeons of England, July 9th, 1896, that there are the following departures from the Regulations of the General Medical Council:—(1) The second course of Anatomy is not required, nor is any equivalent course, such as that of Anatomical Demonstration as enjoined by the Edinburgh College required. (2) Attendance on a Course of *Materia Medica* is not required. (3) In the attendance prescribed at a General Hospital, attendance in only Surgery and Clinical Surgery is required. (4) In the synopsis of the subjects of Examinations, appended to the Regulations of the English College, that of medicine is altogether omitted.

"The President of the Royal College of Surgeons of Edinburgh and his Council are therefore desirous of being informed whether these changes, made by the Royal College of Surgeons of England in the Regulations for its Dental Diploma, have been made with the cognizance of the General Medical Council, or have been sanctioned by it. Several other changes, such as the terms of attendance on Chemistry and Practical Chemistry, might also warrant enquiry, but the matters specified above, are those which the Royal College of Surgeons of Edinburgh regards as more immediately requiring explanation.

I am, sir, yours faithfully,

FRANCIS CADELL, (Secretary.)

To the President of the General Medical Council."

The reason why I mention the Summer Meeting rather than the winter for obtaining the information, is that the summer meeting is supposed to be more dedicated to an inquiry into matters of educational examination, and we should be in a position to have the matter fully and satisfactorily enquired into and reported upon to this Council upon the fresh information which will be obtained.

Sir WILLIAM TURNER: I beg to second the motion.

Mr. BRYANT: I think my best answer to Dr. Heron Watson will be to read the Report of the Dental Education and Examination Committee, for it was you, Sir, who handed to me the letter which has just been read from the Royal College of Surgeons of Edinburgh with a request that it should be handed to each Committee, and that each Committee should report upon it. I have the Report in my hands, and I will read it. (The Report was read)

Dr. HERON WATSON: Who is that Report signed by?

Mr. BRYANT: By myself as Chairman of the Education Committee.

Dr. HERON WATSON: And as having proposed the Report I suppose in the usual way?

Mr. BRYANT: Yes.

Dr. HERON WATSON: Precisely.

Mr. BRYANT: It comes from the Committee itself.

Dr. HERON WATSON: Mr. Bryant is the representative of the English College on this Body.

Mr. BRYANT: Perfectly true.

Dr. HERON WATSON: And it was issued by the English College upon the date which I read, viz., July, 1896. With reference to that Report, I may say that the Royal College of Surgeons of Edinburgh require a second course in anatomy.

Mr. BRYANT: It is not stated so here.

Dr. HERON WATSON: It is an imperfection of the print.

Mr. BRYANT: I felt considerable difficulty in separating myself as it were as representing my own College and as representing this Council. I think, looking at it with one eye as representing this Council I can find no fault with the Report. And I may say that my colleagues saw my difficulty and helped me very kindly to get out of it, so that I should not show there was any partizan feeling as representative of the College. I should be most sorry if I thought I had carried that feeling in the Report. I tried to avoid it, and I believe I have succeeded. I emphasized in my observations that the requirements of the General Medical Council were well observed by all the four Bodies, and I do not know how such a mistake could have been made as has been alluded to. This was drawn up by this Office from material we have here, and I went over it myself, and I confess I did not see that the Edinburgh College had a second course in anatomy. If it has, it has not done itself justice, for it is not down on the curriculum. Apparently none of the Bodies require a second course. In all the other matters my own College entirely follows the recommendations or requirements of this Medical Council with the exception of dropping out *materia medica*. They have dropped out *materia medica* in the conjoint Board, that goes in with therapeutics; but as a special subject of examination it no longer exists. We have brought up the Dental Board to the same as the Conjoint Board. We never have examined in medicine, although a student is required to attend at a recognised hospital for a whole year. He must attend a course of lectures in medicine, but we do not examine him in medicine more than the ordinary examination in Dentistry. There is medical dentistry as well as surgical dentistry, they come in together, and we cannot separate them. There are only two deviations—only one really—viz., the *materia medica*, because I do not call the anatomical one a deviation—and we have additional subjects of a very practical kind, and when the College of Surgeons of Edinburgh state in such a very definite way that the College of Surgeons has broken through so many of their Regulations I feel bound to point out that they have failed to establish that charge. They say that the second course in anatomy is not required. That is true; it is not, and it never has been. It was given up in 1889, and the other Licensing Bodies, with the exception which I now hear of from Dr. Heron Watson, the College of Surgeons of Edinburgh, have all given it up. The College of Surgeons of Edinburgh say that we give no anatomical demonstrations. If they had made the slightest inquiry into the matter they would know that that is not the case. We give as many as to the ordinary medical students, and therefore that statement is utterly incorrect. They say that attendance on *materia medica* is required. That is true.

Dr. HERON WATSON:—May I interrupt Mr. Bryant a moment? This is the Medical Directory, and on page 1439, among the requirements of the College of Surgeons of Edinburgh there is this: "Candidates commencing their studies after October 1st, 1890, must attend the following curriculum. Anatomy one course of 6 months; Practical Anatomy, 12 months; Chemistry and Metallurgy, one course, six months:" I think there has been an error in this, there are two courses of practical anatomy, but there is only one course of systematic lectures upon anatomy, and that is taken since October 1st. Prior to October 1st, there was anatomy of the head, and one course in addition, but in anatomy there was only one course required. They gave up the "head and neck" part, but they have adopted a second course in anatomy.

Mr. BRYANT: We went by the Report of the Examination Committee on the codification of existing Regulations of the Medical Council.

Dr. CAMERON: May I point out that the Report of the Regulations of the Edinburgh College given in the Report before us, says for students beginning October 1st, 1890, six months anatomy, six months practical anatomy, and demonstrations twelve month. That is all.

Mr. BRYANT: I am justifying the action of the Committee. We take the evidence given in this chamber as regards the requirements of the Edinburgh College, and here we have it, as I have said, in the Report of the Education Committee on the codification of the existing regulations of the Medical Council, applicable to dental qualifications, and here under the head of the Royal College of Surgeons, Edinburgh, we have anatomy, one course six months, practical anatomy twelve months, and that has been our guide. With that before me, I could say no more than that we were entirely in union with all the other clinical Corporations, and so we are. Then on the question of Materia Medica, we grant that, but we have given it up in the conjoint, and therefore in this. The attendance prescribed at the General Hospital is only clinical surgery. That is all we demand, because it is on those subjects that the students are examined. We do not require evidence of their having attending a course of clinical medicine at all, and we never have done so. Then they say "In the synopsis of subjects for examination, that of medicine is altogether omitted." That is quite true, and I have explained why. With respect to those questions of practical chemistry and so on, I do not know that I need say any more than I had to say when we were discussing the question of preliminary examination at the Conjoint Board for the full qualification in medicine and surgery. We will accept examinations if the students have been examined by authorities we recognise. We want to have all these preliminary subjects looked upon as preliminary subjects, and got rid of before the student commences his medical career. With the dental student we do precisely the same as in the curriculum for the fully qualified diploma. With respect to the want of courtesy of which Dr. Watson has accused us, I confess I feel much aggrieved. We are always willing and anxious to show the fullest consideration and courtesy to this Council, and I think personally that one has always felt and shown it. But neither my own College, nor I think any other College, has recognised the necessity of asking permission of this Council to alter their curriculum in the way they think best. For my own College I will say at once that they do not admit that at all. When they have formed their conclusions and have drawn up their curriculum, always having the requirements of this Council before them, and always considering them very closely, having it in a measure as a kind of guide, they then present this Council with the product of their labour, and this Report of the New Regulations of the Royal College of Surgeons in examinations in the dental curriculum was handed to this Council as soon as it could have been done, and we have shown no discourtesy whatever. If Dr. Heron Watson charges us with discourtesy because we have not asked permission to alter our curriculum before we considered it then I will accept the position entirely, and say that we have utterly failed, and what is more, we shall fail again. I do not think in such a thing as this that any College should really come up to the Council to ask their advice upon many matters which the College believes itself to be as capable, and some might think more capable, than is the Council, of coming to a conclusion. This Council is here to harmonise the differences that exist between the Corporations, and if this Council can show there are such differences in the curriculum which our College has laid down with regard to dental education and examina-

tion, and we shall only be too happy to reconsider them in the light of your opinion. You have not had an opportunity of forming an opinion upon the curriculum yet, because you never had it. We have not given you that opportunity because we could not. We have taken the very earliest opportunity of handing it to this Council. So that I hold that we have not failed in any way, in any of those acts of courtesy and consideration which are due from a great Corporation to a great Council like this. If it was thought that in any way we had been discourteous, I would make a humble apology, but at present I stand upon my feet and say I see no necessity for any apology at all, or any excuse. I have given an explanation of the matter which is perfectly clear, and if the College of Surgeons of Edinburgh had read these papers with accuracy and thought, they would have seen the explanation and known that it could not be presented. It was only passed by the Council in July, and it was presented to this General Council when the Report of the Inspector was sent to them. All the suggestions you made in your Report have been made here, and made before your criticisms occurred. This has all been under the consideration of the Committee appointed for the purpose for the last year and a half or two years. I trust I have made my position fairly clear to the Council, and that I am cleared of any charge of want of courtesy.

Mr. BRUDENELL CARTER: As a member of the Dental Examination Committee I came fresh from the consideration of the Report which Mr. Bryant has just defended, and I find on the table a Report from another Committee, the General Examination Committee, of which I have ceased to be a member, and which contains this passage,—“The General Medical Council is well aware that it is a very serious matter to urge new and possibly subversive recommendations with too frequent recurrence upon the several Examining Bodies who are entitled to adopt their own curriculum and methods.” Now that seems to me to cover them.

Dr. HERON WATSON: By whom is that signed?

Mr. CARTER: It is signed by Sir Dyce Duckworth.

Dr. HERON WATSON: Quite so.

Mr. CARTER: This was before us yesterday, and although it was subjected to some criticism and was ultimately referred back for further consideration on certain points, the particular passage seemed to be universally accepted, at least, no one made any hostile comment upon it. It seems to me to lay down what has been the principle acted upon by the Council in times past, and I would further say that nothing would be more disastrous than any attempt on the part of this Council to lay down a very hard and fast line of rigid uniformity with regard to matters of this kind. It seems to me that a certain liberty, a certain elasticity in matters of this sort is essential to vitality, and that if we endeavour to crystallise and compress the operation of all our Licensing Bodies in precisely the same moulds and patterns, we shall lose in vitality far more than we are likely to gain. I see not the slightest objection to Dr. Watson's motion, and I am not going to oppose it.

Sir WILLIAM TURNER: As the seconder of this Motion I should like to say a word about it, because I think there are two very simple things that the Council is asked to do. One is to insert upon its Minutes a letter from the Secretary of the Royal Colleges of Surgeons of Edinburgh. I do not think this Council will refuse to enter that letter upon its Minutes. There is perhaps one word in the penultimate line

of the Motion which Dr. Watson would perhaps not object to have altered, and that is the word "requirements." I think if that were altered to the word "recommendations," it would remove a difficulty which I understand Sir Dyce Duckworth feels, and I really do not see why the Council should not agree to the Resolution. What we are really asking is that every medical authority shall from time to time when required by the General Medical Council, furnish such Council with such information as such Council may require, as to the course of study and examination to be gone through in order to obtain such certificates as are in this Act mentioned, and generally as to the requisites for obtaining such certificates.

Dr. THORNE THORNE: I think we should simplify matters if we accepted Sir William Turner's suggestion and limited the demands to two points, but if so, we must take out the first ten lines of No. 2, and begin, "This Council do now instruct the Registrar, &c. That would take the sting out of the whole thing.

Sir WILLIAM TURNER: Dr. Heron Watson and I have conferred on this matter, and I would suggest, sir, that you should first put to the Council No 1 of Dr. Watson's Motions, that asks that the letter from the College of Surgeons of Edinburgh be received and placed on the Minutes.

This was agreed to.

Sir WILLIAM TURNER: Acting upon the suggestion of Dr. Thorne Thorne, the second part of the Motion will now run as follows; "That the Council do now instruct the Registrar that he shall in each year apply in writing to each of Bodies granting dental diplomas or certificates, requiring it to furnish to the Council before its May Meeting in accordance with the provisions of Section 22 of the Dental Act 1878, such details of its existing Regulations under which it grants a diploma or a certificate to practise dentistry or dental surgery as shall enable this Council to determine how far these regulations conform to the existing recommendations of the Council."

The Motion as altered was agreed to.

APPLICATION OF Mr. A. P. MERRILL (Melbourne).

Sir WILLIAM TURNER: I ask if these communications relative to Mr. Merrill's application to be registered as a Dentist have been brought before the notice of Mr. Farrar.

The PRESIDENT: Yes.

Sir WILLIAM TURNER: Is there any answer?

The PRESIDENT: Yes.

Sir WILLIAM TURNER: I move that that answer be received and entered on the Minutes.

Agreed to.

The PRESIDENT: Mr. Farrar advises that Mr. Muir Mackenzie shall instructed to draft a reply to the Privy Council in the lines of former communications.

Mr. WHEELHOUSE seconded the Motion which was agreed to.

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